Ladera Health Watch (Jaclyn French)

What is your submittal about?

Please select one:
Pesticide group

Provide the name of the pesticide and, if possible, its Chemical Abstracts Service (CAS) Registry Number.

You may use DPR's CalPEST Public Search to look up the CAS Registry Number.
Residential landscape pesticides of concern in stormwater-capture and recycled-water reuse systems:

Glufosinate-ammonium — CAS 77182-82-2
Dinotefuran — CAS 165252-70-0
Imidacloprid — CAS 138261-41-3
Indaziflam — CAS 950782-86-2

(Short Format) In one to three sentences, please describe your pesticide-related concern.

The description provided will appear in the online summary.
I am concerned about the repeated residential landscape use of glufosinate-ammonium, dinotefuran, imidacloprid, and indaziflam in communities where children and families regularly encounter treated areas and where urban runoff is intentionally captured and reused for irrigation. In Ladera Ranch, that creates a real-world pathway in which persistent or mobile pesticides may move through runoff, constructed wetlands, recycled-water blending, and back onto community landscapes, which is an exposure setting that may not be fully considered when each pesticide is evaluated in isolation.

(Long Format) Please describe your pesticide-related concern and why it should be a DPR priority.

What type of information should you include?

- **Who or what is affected** (e.g. worker, community, residential, consumer health, sensitive populations, environmental endpoint, pesticide use, or other human health or environmental concern)
- **Description of the situation of concern**, including use site (e.g., crop or residential), region, type of pesticide use and application method (e.g., ground spraying; soil fumigation; bait applications; etc.)

Ladera Ranch provides a useful real-world example of why pesticide prioritization should look beyond an individual application made in isolation.

Ladera Ranch is a densely landscaped master-planned residential community of more than 20,000 people, with parks, trails, schools, playgrounds, sports fields, sidewalks and common areas integrated throughout residential neighborhoods.

Records and resident notices we reviewed identified 19 pesticide products associated with common-area landscape, tree, insect and rodent-control programs in June 2026 alone, involving at least three principal commercial applicators. The products included glufosinate, dinotefuran, imidacloprid, bifenthrin, fipronil, beta-cyfluthrin, pendimethalin and others. Complete application-level records have not yet been provided to us although we have been asking since May, so we are basing this off of notices that were provided to the community. These are only the applications done by the HOA, LARMAC. This does not include applications of other products by the 17 sub-associations or four schools in Ladera, all of which have their own pesticide schedules.

The point is broader: this is what pesticide exposure can look like in an actual California residential community.

A family does not encounter pesticides one registration at a time. The same child may walk on sidewalks adjacent to herbicide applications, play near treated landscaping, encounter insecticides applied to trees or recreational facilities, and use parks and fields receiving irrigation generated in part from locally recovered urban runoff.

That cumulative, interconnected exposure setting should inform DPR's prioritization process.

1. Glufosinate-ammonium: routine use in high-contact residential areas

Ladera's pesticide notices identified Lifeline Herbicide, containing glufosinate-ammonium, for weed control in common areas including cracks, sidewalks, curbs, pavers, slopes, planters and tree wells.

These are not isolated agricultural applications. They are places where children walk, residents exercise, pets travel and families move through the community every day.

EPA's environmental-fate work also identifies a pathway relevant to this type of use. EPA has concluded that, because glufosinate is soluble and mobile, the parent compound and primary degradate can dissolve and be carried to surface water by rainfall and irrigation.

This matters because the regulatory question should not be limited to whether a properly applied product creates an acceptable risk to a hypothetical individual at the moment of application. DPR should also consider whether repeated routine use of a herbicide on hardscape-adjacent and residential landscaping is justified when nonchemical and lower-risk weed-management methods are readily available.

I therefore ask DPR to evaluate whether continued routine residential and public-landscape use of glufosinate is warranted and whether mitigation should include restrictions on routine cosmetic use, high-contact areas and areas directly connected to stormwater/runoff systems.

2. Dinotefuran and imidacloprid: highly mobile insecticides in a community that deliberately recovers runoff

The June Ladera inventory identified multiple neonicotinoid products:

- Safari 20 SG — dinotefuran
- Alpine WSG — dinotefuran
- Criterion 2F — imidacloprid
- Mallet 2F — imidacloprid
- Temprid FX — imidacloprid combined with beta-cyfluthrin

Thus, the concern is not a single product or applicator. Multiple pesticide programs within the same residential community can introduce the same active ingredient or chemical class through different uses.

EPA describes dinotefuran as highly water soluble and very highly mobile. It is stable to hydrolysis and relatively persistent to aerobic and anaerobic metabolism, with EPA reporting an aerobic aquatic metabolism half-life of approximately 80.8 days. EPA further identifies the potential for residues to reach adjacent water bodies through runoff.

EPA similarly describes imidacloprid as readily soluble and persistent in aquatic environments except under conditions favorable to photolysis, with runoff and spray drift among its major transport routes from treated areas into aquatic habitats. EPA's assessment identified acute and chronic risks of concern to freshwater invertebrates for agricultural and

non-agricultural uses.

Ladera makes those characteristics particularly relevant because the community was intentionally designed to recover urban runoff for reuse.
The Regional Water Quality Control Board describes the Horno Urban Water Recovery Facility at the southern end of Ladera Ranch as a system that collects urban runoff in the Horno Water Quality Basin, sends it through approximately seven acres of constructed wetlands, and then blends the recovered water with recycled water for subsequent landscape irrigation.

Santa Margarita Water District likewise states that it collects urban-return water from Horno Creek, Oso Creek and Dove Creek and blends it with recycled water for irrigation, including irrigation of parks, schools, slopes and medians.
Importantly, SMWD also states that it does not routinely test recycled water for pesticides and herbicides because its recycled-water permit does not require such testing, although supplemental testing may sometimes occur.

The exposure pathway itself is not hypothetical:

Residential pesticide use → irrigation/rain runoff → urban runoff collection → constructed wetland treatment → recycled-water blend → landscape irrigation.

For highly mobile and environmentally persistent pesticides, that is precisely the kind of real-world system DPR should consider when determining whether existing use conditions adequately protect human health and the environment.

I therefore recommend that DPR evaluate dinotefuran and imidacloprid individually and as part of the neonicotinoid class, with particular attention to non-agricultural residential use, runoff, recycled-water systems, transformation products and cumulative use of multiple products containing the same active ingredient.

3. Indaziflam: persistence is particularly relevant in residential runoff systems

I also recommend priority review of indaziflam, the active ingredient in products including Specticle.

EPA describes indaziflam as moderately persistent to persistent in aerobic soil, with half-lives exceeding 150 days, and persistent in aerobic aquatic environments, with half-lives exceeding 200 days. EPA also states that it has a high potential for reaching surface water through runoff for several months or more after application and requires surface- and groundwater advisory language because of its persistence and mobility.

That characteristic deserves particular scrutiny when a pesticide is used as a routine pre-emergent in residential landscapes where runoff is intentionally captured and reused.

Long residual activity may make a pre-emergent herbicide operationally convenient. But in a dense residential setting, persistence is also an exposure characteristic.
DPR should evaluate whether long-residual pre-emergent herbicides such as indaziflam should be routinely used around homes, parks, trails, schools and runoff-recovery systems when mechanical, cultural, organic and other lower-risk weed-management approaches are available.

Ladera also demonstrates why DPR should consider the whole exposure system

The Ladera inventory contains another category relevant to DPR's later environmental review: bifenthrin, beta-cyfluthrin and fipronil.

These compounds behave differently from highly soluble neonicotinoids. For example, pyrethroids can associate strongly with particles and sediments rather than remain dissolved in the water column. EPA has imposed specific restrictions on bifenthrin to prevent entry into drains and stormwater systems and requires applicants to avoid irrigation to the point of runoff. EPA has also required runoff and drift mitigation for pyrethroids because of ecological risks.

This illustrates why simply asking whether a pesticide remains dissolved in recycled water is insufficient. DPR's evaluation should consider both water-mobile pesticides, and particle-bound pesticides that may accumulate in stormwater basins, constructed wetlands or sediments.

Why Ladera matters to SPARC

A community does not need a demonstrated cancer causation mechanism before the State asks whether repeated application of persistent, mobile or otherwise higher-concern pesticides in places occupied by children is necessary and whether existing regulation adequately accounts for actual patterns of use.

Ladera provides unusually concrete information about:
• repeated non-agricultural pesticide use;
• multiple applicators and overlapping chemical classes;
• applications in pedestrian and residential areas;
• children and families as a potentially exposed population;
• irrigation and stormwater as potential transport mechanisms;
• a built environment intentionally designed to collect urban runoff;
• constructed-wetland treatment rather than pesticide-specific advanced treatment;
• incorporation of recovered runoff into recycled irrigation water; and
• the absence of routine pesticide monitoring in that recycled-water system.

Those are precisely the where, when, who and how factors DPR has asked Californians to provide through the SPARC process.

Requested action

I respectfully request that SPARC recommend that DPR prioritize:

1. Glufosinate-ammonium for evaluation of repeated residential/public-landscape exposure, runoff potential and the availability of safer weed-management alternatives;

2. Neonicotinoids, particularly dinotefuran and imidacloprid, for evaluation of non-agricultural residential uses, aquatic persistence, runoff, recycled-water and stormwater pathways, transformation products and cumulative exposure from multiple products; and

3. Indaziflam for evaluation of persistent pre-emergent use in residential and publicly accessible landscapes, particularly in communities with stormwater capture or water-reuse infrastructure.

Where evaluation identifies significant risks, I ask DPR to consider the full range of mitigation available to it, including restrictions on routine residential or cosmetic uses, limits in child-frequented areas, setbacks from stormwater and water-recovery infrastructure, application-method requirements, monitoring requirements, transition to safer alternatives, and cancellation where significant impacts cannot otherwise be adequately mitigated.

DPR itself recognizes that continuous evaluation can result in restrictions, buffers, application requirements and, in serious cases where significant impacts cannot otherwise be reduced, cancellation of a pesticide registration.

Ladera Ranch should not be treated as proof of harm from any one pesticide. It should be treated as something potentially more useful to regulators: a real California community showing how numerous individually registered pesticide uses can intersect with children, residential landscapes, stormwater, aquatic systems and water reuse in ways that are difficult to see when each product is evaluated in isolation.

What scientific information or additional information supports your submittal?

DPR will collect pesticide use reports, pesticide illness reports, environmental and human health data for each submission; submitters do not need to provide this information. Description of DPR collected data can be found on slide 52 of August 7th SPARC Meeting Slides.

Attach supporting documents using the “Upload a File” option below.

Please provide a brief rationale for each file you attach. Explain why each attachment is being included and how it supports your submittal.

1. County of Orange Final EIR No. 555 — Hydrology and Water Quality.
This pre-development environmental review for Ladera Ranch identified pesticides and trace organics among the anticipated categories of pollutants in urban runoff and concluded that development-related pollutant contributions were expected to have a significant impact on water quality. The EIR also required an urban runoff management plan addressing Horno, Trabuco and San Juan creeks. This document demonstrates that pesticide transport through urban runoff was recognized as a potential environmental issue in the original planning of the community. It does not establish that pesticides are currently present in Horno Creek or recycled water; rather, it supports evaluating the runoff/reuse pathway under current conditions.

2. Regional Water Quality Control Board — Addendum No. 4 to Order No. 97-52, Horno Urban Water Recovery Facility.
This official regulatory document establishes the Horno urban-runoff recovery and recycled-water blending pathway and the monitoring requirements applicable to that system. It supports the concern that pesticides used in residential landscapes may enter runoff that is subsequently collected and incorporated into recycled irrigation water.

3. LARMAC June 2026 Pesticide Product List.
This document identifies pesticide products associated with LARMAC common-area landscape, tree, insect and rodent-control programs during June 2026 and demonstrates the variety of active ingredients being used within a single residential community. Ladera also contains 17 separate sub-associations and four schools with their own pest-management programs, meaning this list represents only one component of the community's overall pesticide-use environment. It is included to document the real-world residential use underlying this submission.

4. Santa Margarita Water District — 2015 Urban Water Management Plan.
This official SMWD planning document describes the District's recycled-water system and urban-runoff recovery infrastructure serving its service area, including Ladera Ranch. It provides additional context for the runoff-to-recycled-irrigation pathway described in this submission.

5. Santa Margarita Water District — Water Quality: Ladera Ranch.
This current SMWD information confirms that urban-return water from Horno Creek, Oso Creek and Dove Creek is blended with recycled water used for landscape irrigation, including parks and schools. It also states that SMWD does not routinely test recycled water for pesticides and herbicides because such testing is not required under the applicable recycled-water permit. It is included because it directly documents both the current water-reuse pathway and an important monitoring gap relevant to this submission.

SOURCE MATERIAL EXCERPT

Hydrology and Water Quality

Antonio Parkway Roadway Alignment and Land Use Plan — Ladera Ranch
County of Orange • Final Environmental Impact Report No. 555
State Clearinghouse No. 94031075 • Certified October 17, 1995

Section 3.2 in its entirety — report pages 3.2-1 through 3.2-15
(EIR volume 1, production pp. 946–963)

Contents of this compilation

- **3.2.1 Existing Conditions** — drainage methodology from the Master Plan of Drainage prepared by Williamson & Schmid; watershed and subarea description; Trabuco Creek, San Juan Creek and Horno Creek; existing surface water quality; groundwater and the San Juan Basin; flooding
- **3.2.2 Project Impacts** — surface water patterns and volumes; detention requirements; the five categories of urban runoff pollutants of concern; flooding; groundwater
- **3.2.3 Mitigation Measures** — Measures 4 through 8, including the urban runoff management plan required for Trabuco, San Juan and Horno creeks
- **3.2.4 Level of Significance After Mitigation**
- Exhibits and tables reproduced within the section, including the drainage and watershed exhibits

Key language in these pages

> *"Grading of the site would modify Horno Creek by infilling the existing channel and recreating the streambed."*
>
> *"There appears to be no historical water quality monitoring data available for Horno and Trabuco creeks within the study area."*
>
> *"The project's contributions of the pollutants discussed above are expected to have a significant impact on water quality."*
>
> *"The project would be in full compliance with federal, state and local water quality programs; however, the incorporation of the mitigation measures listed above would not ensure that all potential water quality impacts to those three streams would be reduced to a level considered less than significant."*

Note. Section 3.2.2 identifies five categories of pollutants expected in urban runoff from the developed project: solids, nutrients and organic matter; heavy metals, described as by far the most prevalent priority pollutants found in urban runoff; hydrocarbons; **pesticides and trace organics**; and bacteria. The section's treatment of pesticides relies on the U.S. EPA Nationwide Urban Runoff Program study of 1983. Water quality impacts to Trabuco, San Juan and Horno creeks were adopted as significant and unavoidable, which required the Board of Supervisors to adopt a Statement of Overriding Considerations in order to approve the project. Mitigation Measure 7, appearing at report page 3.2-14, required an urban runoff management plan

3.2 *HYDROLOGY AND WATER QUALITY*

Williamson & Schmid prepared a *Master Plan of Drainage* for the proposed project. The drainage study provides information, technical data, and results for both the existing condition and the developed condition. Hydrologic data and calculations were performed in accordance with the Orange County Environmental Management Agency's (OCEMA) procedures outlined in their 1986 Hydrology Manual. Based upon these procedures, the drainage study defines the conceptual configuration of the master planned drainage facilities necessary to accommodate the proposed land development and roadway extension. This section summarizes the results of the drainage study, which is contained in Appendix D of this draft EIR (bound separately). The results of the drainage study are not intended to be used for design purposes but, rather, are for planning and phasing; further analysis will be necessary to determine final alignments, sizes, and discharge rates of drainage facilities.

3.2.1 EXISTING CONDITIONS

The study area is located in the foothills of the Santa Ana Mountains below Santiago Peak. Prominent landform features that define the topographical character of the project study area include valleys formed by Horno Creek and Arroyo Trabuco, and the gently rolling and steeply contoured hillsides of the Chiquita Ridge. The study area generally drains southwesterly towards Trabuco Creek and southerly towards San Juan Creek. Runoff from the majority of the proposed land development area drains to Horno Creek, which extends northward through the center of the study area. Whereas Trabuco Creek and San Juan Creek are considered to be major drainages within southern Orange County, Horno Creek is not because of its relatively short extent. San Juan Creek lies along the southern edge of the study area, and Trabuco Creek lies to the west, outside the proposed development area.

Surface Drainage Patterns and Volumes

The study area lies within the three watersheds of Trabuco, Horno, and San Juan creeks (see Exhibit 3.2-1). Approximately 200 acres of the land development area currently drain to Trabuco Creek and 2,140 acres drain to Horno Creek. The flows from Horno Creek and Trabuco Creek, which include runoff from the study area, eventually converge with flows in San Juan Creek, which ultimately flows to the Pacific Ocean. As a result of onsite topography, runoff from the land development area does not drain directly into San Juan Creek. The onsite drainages are currently in a natural condition; there are no flood control facilities or improvements on the study area.

Rainfall (inches per hour) is measured as the depth to which water will accumulate in a flat-bottomed, straight-sided container. Infiltration can be thought of as the rate (inches per hour) at which the water level in the same container might drop if the water were leaking through a porous base. Runoff is

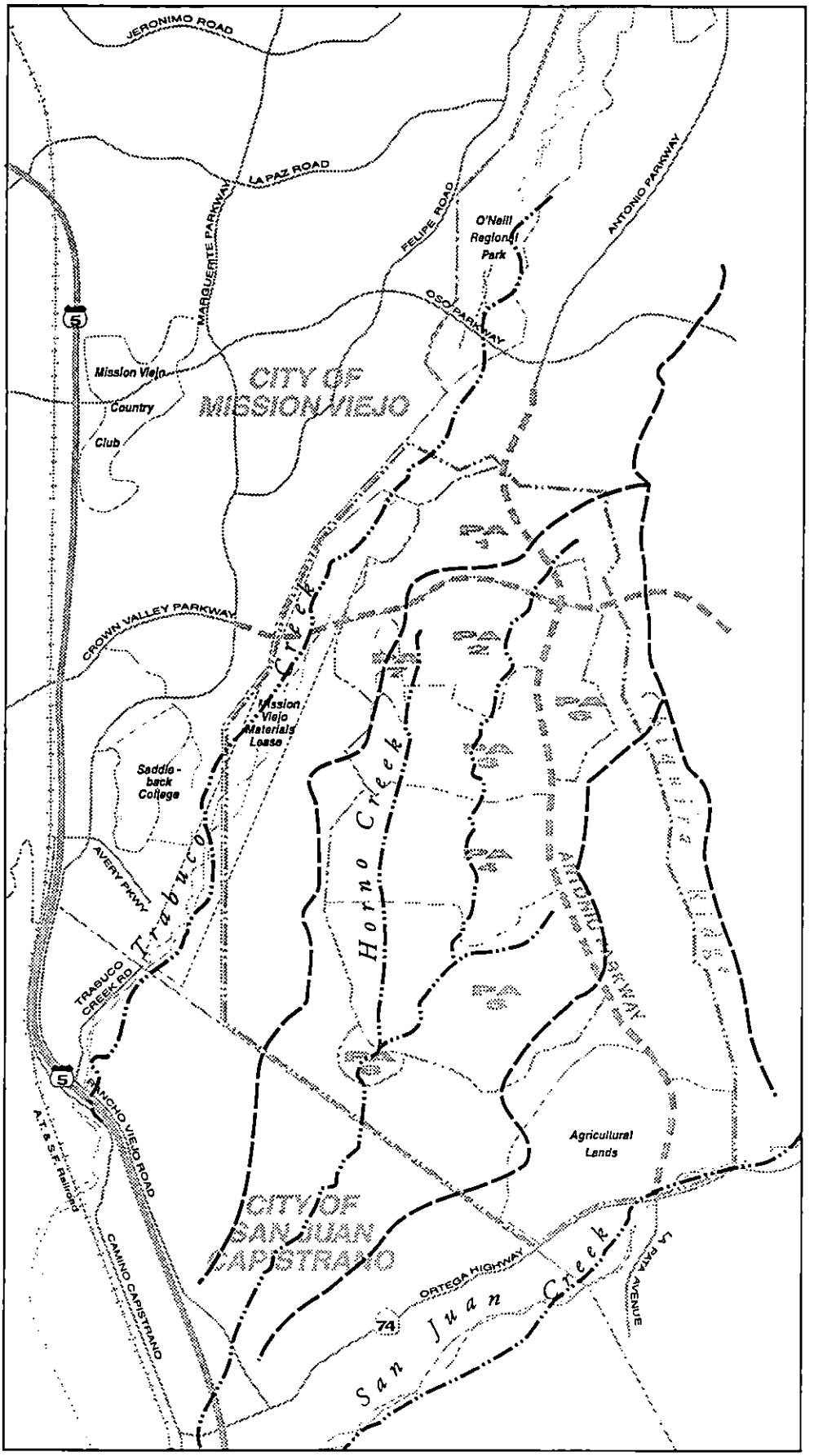
the amount of overflow of the container per hour when the rain falls too fast to be disposed of by leaking through the base. For design purposes, runoff is calculated in cubic feet per second (cfs), which is the volume of overflow entering an open stream channel. If the amount of surface runoff is greater than the hydrocapacity of the channel, water will spill over the sides of the channel, or pond at the opening of a drainage pipe, and flood surrounding land uses.

Williamson & Schmid conducted a hydrology study for the proposed project based upon OCEMA's standard hydrology procedures. Specifically, pre- and post-development runoff rates were calculated by applying the Modified Rationale Method. Simply stated, under the Modified Rationale Method, the study area is divided into subareas based upon like topography and soil types. All surface runoff within a single subarea flows towards a single point; the velocity (cfs) and volume (acre-feet) of flow at this point can be calculated. The flow from a subarea either (1) leaves the study area and continues downstream, or (2) flows into a second subarea where it is aggregated into the runoff volume and velocity. The OCEMA hydrology procedures are based on a theoretical storm constructed from historic rainfall values of large storms and patterned after events commonly observed during major storms in the Orange County region.

Descriptions of Trabuco and Horno creeks, which currently receive runoff flows from the land development area, are provided below.

Trabuco Creek. Trabuco Creek is entirely natural from its headwaters to a point just north of its crossing under the I-5, with the exception of the area used for sand and gravel extraction. Approximately 200 acres of the northwestern portion of the proposed land development area lie within the Trabuco Creek watershed. In the undeveloped condition, runoff within this 200-acre area drains into three small tributaries which continue in a westerly direction from the land development boundary until they converge with flows in the Trabuco Creek (see Exhibit 3.2-2). Where these tributaries exit the land development area, existing peak flows are estimated at 240 cfs, 34 cfs, and 185 cfs (Table 3.2-1 and Exhibit 3.2-2) during a 100-year storm, and 181 cfs, 26 cfs, and 140 cfs during a 25-year storm. A 100-year frequency storm is a storm that has a 1-percent chance of occurring each year. Likewise, a 25-year frequency storm has a 4-percent likelihood of occurring and a 2-year frequency storm has a 50-percent chance of occurring.

Horno Creek. In the undeveloped condition, approximately 2,140 acres of the land development area lie within Horno Creek watershed. Runoff from this area drains into Horno Creek, which extends through the central portion of the development area. Horno Creek flows in a southerly direction, eventually exiting at the southerly tip of the proposed development area (Planning Area 8), just northeast of the Stone Ridge development. At this point, the total volume of existing runoff is estimated at 886 acre-feet during a 100-year storm event and 499 acre-feet during a 25-year storm event. Existing peak flow rates are estimated to be 2,331 cfs and 1,531 cfs during the 100- and 25-year storm, respectively.



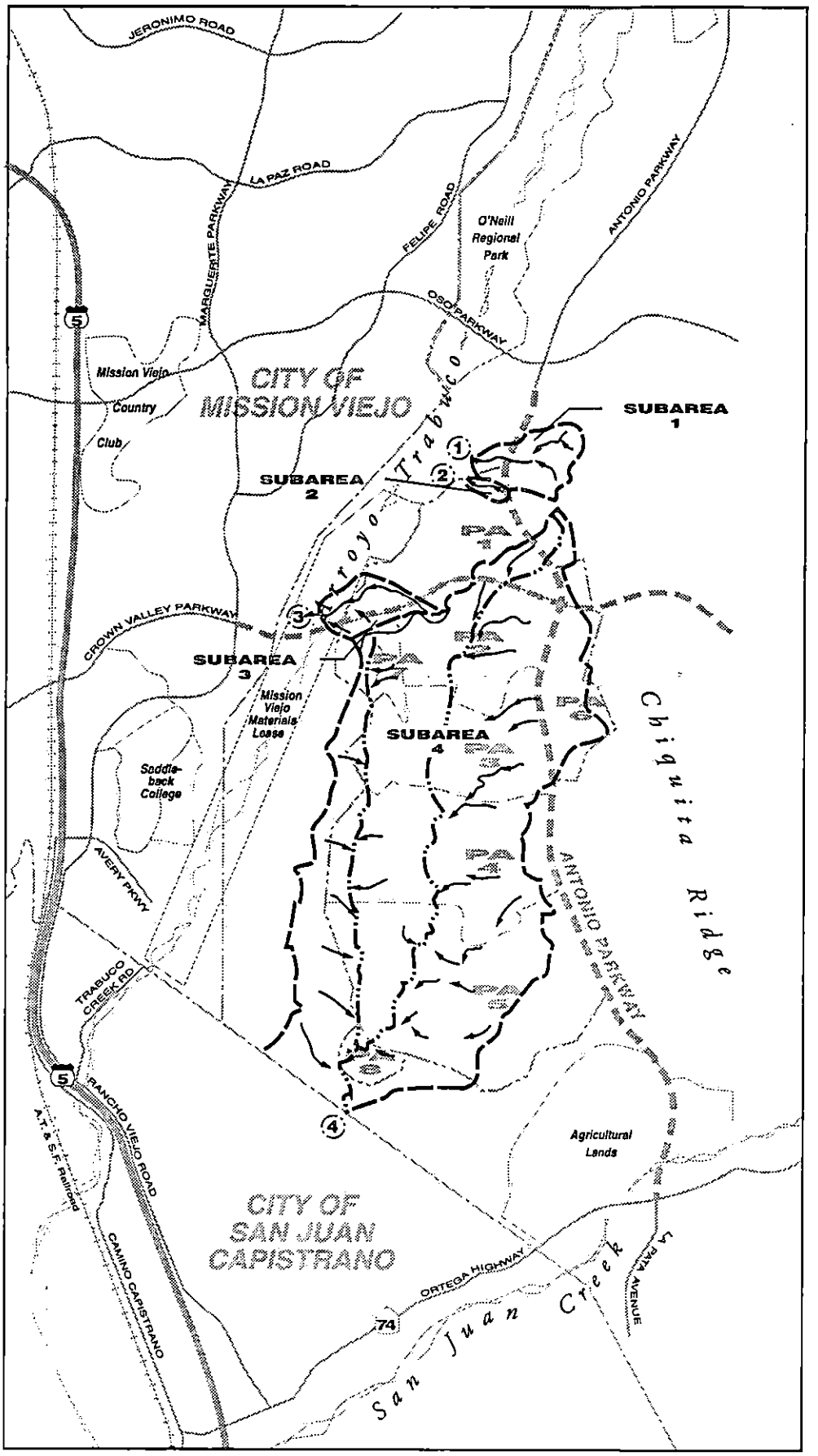
LEGEND

- Primary Road Alignment
- Land Use Study Area Boundary
- Proposed Development Area Boundary
- Proposed Planning Area
- Proposed Road
- Existing Feature
- City Boundary
- Watershed Boundaries
- Creek

4000' 2000' 0'

Michael Brandman Associates

Exhibit **3.2-1**
Onsite Watersheds



LEGEND

- Primary Road Alignment
- Land Use Study Area Boundary
- Proposed Development Area Boundary
- Proposed Planning Area
- Proposed Road
- Existing Feature
- City Boundary
- Drainage Subarea Boundary
- Direction of Flow
- Stream Channel
- (1) Discharge Point Corresponds to Table 3.2-1

Michael Brandman Associates

Exhibit **3.2-2**

Existing (Pre-Development) Drainage Patterns

Antonio Parkway Road Alignment and Land Use Plan EIR

TABLE 3.2-1
EXISTING PEAK FLOWS
EXITING THE LAND DEVELOPMENT AREA

Discharge Point (Corresponds to Discharge Points on Exhibit 3.2-2)	Subarea Drainage Area (acres)	Existing Peak Flows (cfs)	
		100-year storm	25-year storm
Flows to Trabuco Creek			
1	99	240	181
2	11	34	26
3	91	185	140
Flows to Horno Creek			
4	2,138	2,331	1,531
Source: Williamson & Schmid 1994.			

Surface Water Quality

Water quality in the natural receiving waters downstream of the study area is affected by discharges of stormwater runoff from surrounding urban development. There appears to be no historical water quality monitoring data available for Horno and Trabuco creeks within the study area. Because the study area is mostly undeveloped, such data, with some limited agricultural nonpoint source contributions, should reflect good water quality in terms of mineral content, organic and nutrient load, and toxic contaminants. The primary pollutants of concern in rural/agricultural runoff include fine suspended solids, pesticides, herbicides, and nutrients, notably nitrogen and phosphorous compounds. Erosion of agricultural land may also have a direct effect on the levels of dissolved salts and metals in runoff and affect the pH of downstream receiving waters. Onsite cattle grazing, and construction and maintenance activities associated with the electric substation, are not expected to have resulted in elevated levels of pollutants in downstream areas.

South of the study area, Trabuco Creek and San Juan Creek receive urban stormwater runoff from residents along Ortega Highway, especially during the rainy season. Throughout the year, the urbanized areas may contribute "nuisance" flows from the storm drain system to San Juan Creek resulting from excess irrigation water loss and various incidental human uses (e.g., vehicle washing, pavement cleaning, etc.). Nuisance flows consist of ambient water quality ranging from nearly

drinking water quality to highly contaminated with oil and grease, surfactants, and pesticides; however, no monitoring data are available for the study area.

A large portion of the Trabuco and San Juan watersheds is contained within the Cleveland National Forest. The steep hillsides and higher rainfall intensities provide a relatively high erosion potential, allowing runoff to transport relatively large sediment loads downstream. Because this sediment source lies within lands administered by the U.S. Forest Service, a future change in land use is unlikely. Therefore, natural systems will continue to erode slopes and carry fine sediments down existing tributaries into the Arroyo Trabuco watershed.

The project site lies within the San Juan hydrographic subunit as defined within the San Diego Water Quality Control Plan (Regional Water Quality Control Board, San Diego Region and State Water Resources Control Board 1979). The existing potential beneficial uses of surface water from this watershed are (1) agricultural water supply, (2) industrial water supply, (3) contact and non-contact recreation, (4) warm and cold water fish habitat, (5) wildlife habitat, and (6) preservation of rare and endangered species. Beneficial uses of the groundwater include municipal, industrial, and agricultural uses and potential groundwater recharge.

In order to achieve these designated uses, the Water Quality Control Plan specifies numerical criteria for selected water quality constituent(s), i.e., concentrations that are not to be exceeded more than 10 percent of the time during any 1-year period. The appropriate surface water characteristics for the San Juan hydrographic subunit are:

- Total dissolved solids - 500 mg/l
- Chloride - 250 mg/l
- Odor - none
- Iron - 0.3 mg/l
- Methylene blue active substances (detergents - 0.5 mg/l, boron - 0.5 mg/l)
- Sodium - 60 mg/l
- Sulfate - 250 mg/l
- Fluoride - 1.0 mg/l
- Manganese 0.05 mg/l

Total nitrogen and total phosphorous are regulated under various numerical criteria or chemical ratios, depending upon the receiving stream characteristics and the nutrient value of the substances in causing undesirable plant growth. Other water quality constituents, such as heavy metals, pesticide, pH, dissolved oxygen, and bacteria, are currently regulated under general criteria standards applicable to waters with specific designated beneficial uses.

Flooding

As discussed above, the surface water drainages within the study area are in a natural condition. Trabuco Creek is entirely natural from its headwaters to a point just north of its crossing under the I-5, with the exception of the portion of the channel within the sand and gravel extraction area. South of the study area, Horno Creek continues through an existing development, an existing freeway culvert, and ultimately to San Juan Creek. The culvert under the I-5 has a capacity of 3,100 cfs and is approximately 1.5 miles downstream of the study area.

Because the creek channels within the study area are predominantly deeply incised arroyos, they can generally hold flood waters within their banks so that flood hazards associated with these water courses are considered minimal. According to the Safety Element of the Orange County General Plan, San Juan and Trabuco creeks have the potential to create localized flooding during storm events; the extent of inundation would be limited. As discussed above, Horno Creek is not considered a significant drainage and, therefore, is not identified in the Safety Element.

According to the Orange County Safety Element, the hazard of inundation within the study area from dam failure is limited. The study area lies outside the flood inundation areas of the Prado Dam, Santiago Reservoir, and Villa Park Reservoir.

Groundwater

The study area lies within the Orange County Groundwater Basin which is managed by the Orange County Water District (OCWD). A large portion of northern Orange County is underlain by a large groundwater basin which is primarily supplied by the Santa Ana River watershed. Other Orange County streams provide some additional water supply, including San Juan Creek.

According to the Resource Element of the Orange County General Plan, San Juan Creek is a valuable asset to local water resources. Water is withdrawn from this aquifer for municipal water use. The natural safe yield of this basin is approximately 15,000 acre-feet (4.8 billion gallons) per year, with the potential for additional groundwater storage.

Some groundwater occurs in the upper layers of the alluvium within the onsite stream channels. Perched groundwater, in the form of subsurface stream flow, is expected within the major tributary drainage courses crossing the study area; substantial surface and subsurface flow is present within the San Juan Creek drainage course.

3.2.2 PROJECT IMPACTS

Both the proposed extension of Antonio Parkway and implementation of the land use plan would result in landform alterations which would modify natural drainage courses and their tributary areas within the study area. The major changes in watershed runoff process in urbanizing areas are due to two principal factors: the increase in impervious surfaces due to development and the increase in hydraulic conveyance capacity due to the construction of flood control channels and pipe systems. These factors influence both runoff quantity and quality from urbanized areas. The type of impacts to hydrology and water quality from the proposed roadway extension and the land use plan would be similar; therefore, the discussion of impacts from both of the project components is combined. However, it should be noted that, due to the greater surface area that would be affected, the magnitude of impacts to hydrology and water quality from implementation of the land use plan would be greater than those associated with the Antonio Parkway extension.

The drainage study prepared for the project by Williamson & Schmid, contained in Appendix D, identifies several impacts associated with the proposed project. These impacts include changes in runoff volumes, runoff velocities, and drainage patterns; increases in the potential for erosion and discharge of sediment to Trabuco and San Juan creeks during construction activities; a decrease in the quality of runoff discharge as a result of agricultural and urban pollutants; and reductions of stormwater percolation to the groundwater table underlying the site. These impacts are discussed below.

Thresholds of Significance

The landform alterations associated with the proposed land use plan and roadway extension, and the subsequent placement of structures, streets, and landscaped areas, would modify natural drainage courses and would have potential impacts on surface water quality, flooding, and groundwater. Thresholds of significance for each of these potential impacts are provided below.

Significant impacts on surface water resources would occur if uncontrolled runoff results in erosion and subsequent sedimentation of downstream water bodies. Significant impacts may also result if the increase in runoff is in excess of downstream capacity.

Impacts on water quality would be considered significant if they resulted in human health and safety impacts. Changes in water quality that affect biological communities would also be considered significant.

Significant impacts would result if the project would impose a flood hazard onsite or on adjacent properties, or expose people or property to risk.

The project would be considered to have a significant impact on groundwater if it resulted in groundwater withdrawals in excess of the safe yield of the groundwater basin or if it significantly reduced the amount of recharge to an aquifer. Significant impacts on groundwater quality may also occur if the project results in an increased risk to human health and safety.

Surface Water Patterns and Volumes

As discussed in Section 3.2-1, the Williamson & Schmid drainage study calculates runoff rates by applying the Modified Rationale Method. The Modified Rationale Method divides the land development area and roadway extension into subareas based upon like topography and soil types. Because implementation of the land use plan and roadway extension would result in landform alterations and new surface areas, including compacted fills, landscaping, and impervious surfaces, the boundaries of the subareas are different between the pre- and post-development condition. Also, the total area contributing runoff to the land development area would increase in the post-development condition because, with the change of topography, offsite areas would provide surface runoff to the study area. Changes to the drainages within the study area are discussed below.

Grading of the site would modify Horno Creek by infilling the existing channel and recreating the streambed. The proposed drainage plan includes placing storm drain facilities in general alignment with the current location of the creek. Additionally, grading for the project would infill minor tributary drainages that traverse the study area and discharge into San Juan, Trabuco, and Horno creeks. The effects of these, and other landform alterations, to surface flows are enumerated below.

Trabuco Creek. Three drainage subareas (subareas 1, 2, and 3) in the northern portion of the proposed land development area drain to Trabuco Creek (see Exhibit 3.2-3). Two of these subareas (subareas 1 and 2), comprising a total of 113 acres, are proposed to remain in their natural condition after development. Subarea 3 would collect runoff from approximately four times as much land area; as a result, the volume and velocity of direct flows to Trabuco Creek would substantially increase with full implementation of the development plan. Table 3.2-2 shows the expected flow after development. As indicated in the table, flows from this subarea would be 958 cfs during a 100-year storm and 735 during a 25-year storm. The drainage plan proposes to direct surface runoff from this subarea to storm drains within Crown Valley Parkway and unnamed interior roadways. These roadways would carry surface flows to a culvert north of the future extension of Crown Valley Parkway. Without mitigation, the increase in flows from subarea 3 associated with the project would be considered significant.

Horno Creek. In the post-development condition, three drainage subareas within the land development area and roadway extension would provide runoff to Horno Creek (subareas 4, 5, and 6). The combined acreage of these subareas would be slightly more than the amount of land contributing runoff to Horno Creek in the undeveloped condition; however, the development process would substantially increase runoff in these drainage subareas due to an increase in impervious surfaces. The volume of runoff produced by the land development area and the roadway extension and discharged into Horno Creek

is anticipated to be approximately 571 acre-feet during a 25-year event and 865 acre-feet during a 100-year event.

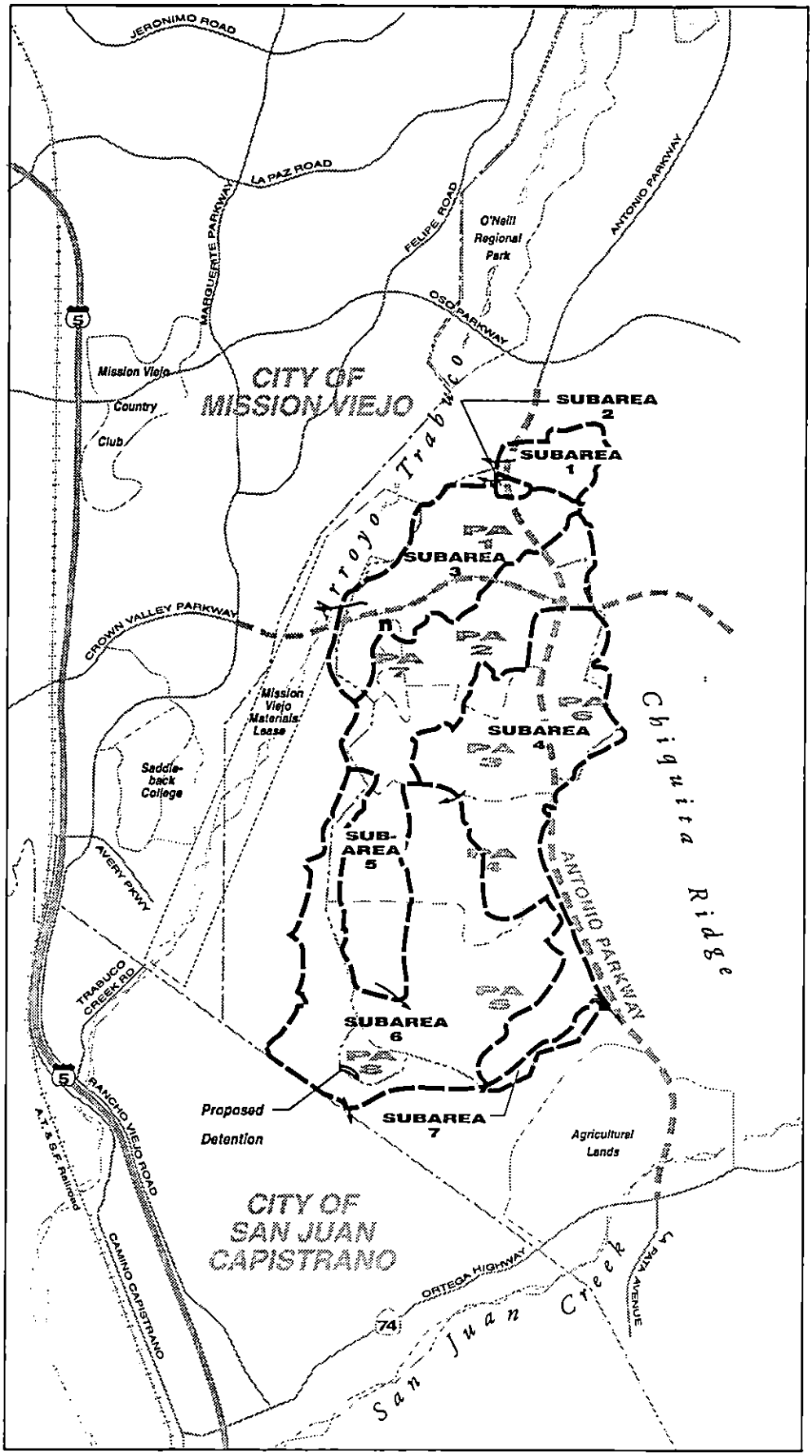
TABLE 3.2-2
POST-DEVELOPMENT PEAK FLOWS

Map location No. (Exhibit 3.2-3)	Subarea Drainage Area (acres)	Peak Flows (cfs)	
		100-year storm	25-year storm
Flows to Trabuco Creek			
1	101	244	185
2	12	36	28
3	378	958	735
Flows to Horno Creek			
4	645	1,458	1,106
5	595	1,399	1,072
6[a]	2,144	4,817	3,691
w/detention[a]	2,144	2,325	2,325
Flows to San Juan Creek			
7	94	257	198

[a] Includes runoff and acreage within subareas 4, 5, and 6.

Source: Williamson & Schmid 1994.

Runoff within drainage subareas 4 and 5 would drain toward the north-south extending roadways and then flow southerly into subarea 6. Drainage from subareas 4 and 5 would combine with runoff generated in subarea 6 and eventually exit the land development area at the same location as runoff in the undeveloped condition (i.e., the southerly tip of Planning Area 8). Peak flows at this discharge point are expected to be 4,817 cfs during a 100-year event and 3,691 cfs during a 25-year event. After exiting the land development area, the creek would continue through an existing development (Stone Ridge), an existing I-5 culvert, and ultimately to San Juan Creek. The culvert under the I-5 has limited capacity (3,100 cfs); therefore, a detention basin is proposed within the land development area to reduce the developed peak flow rate from the land development area to its existing level. The detention basin would be designed for a 100-year event. The design of the basin would be governed by the reduction of the peak flow rate from 4,817 cfs (developed condition) to 2,325 cfs (natural condition). It is anticipated that



LEGEND

- Primary Road Alignment
- Land Use Study Area Boundary
- Proposed Development Area Boundary
- Proposed Planning Area
- Proposed Road
- Existing Feature
- City Boundary
- Drainage Subarea Boundary
- Direction of Surface Flow

4000' 2000' 0' 4000'

Michael Brandman Associates

Exhibit **3.2-3**

Ultimate (Post-Development) Drainage Patterns

approximately 52 acre-feet of storage would be needed to reduce the proposed flows to an acceptable level. With implementation of the detention basin, flows from the land development area would be reduced to a less than significant level. The proposed Antonio Parkway extension would contribute to the increases in surface runoff flows to Horno Creek from the study area. However, the roadway extension would result in small increases of flow relative to the increases associated with the land use plan. Runoff from Antonio Parkway could be accommodated by culverts and velocity reducers alone; no onsite retention would be required.

San Juan Creek. Runoff from the drainage subarea in the southern portion of the study area ultimately flows into San Juan Creek (subarea 7). Flows from several small drainage areas would be intercepted and directed along the southerly limit of the land development area to the proposed Antonio Parkway. The flows would then be conveyed in a proposed storm drain in Antonio Parkway to San Juan Creek. Subarea 7 comprises approximately 94 acres, including Antonio Parkway, and would generate approximately 257 cfs of runoff during a 100-year event after development and 198 cfs during a 25-year event. If not mitigated, this increase in flows would be significant.

In accordance with OCEMA standards, master planned storm drain facilities for the development area would be designed for the 25-year return frequency storm event; facilities for the Antonio Parkway extension would be designed for the 100-year storm. Runoff collected from the study area would be piped to various outlet structures and ultimately to natural canyons tributary to Trabuco and San Juan creeks. As discussed above, runoff from the project area would be expected to increase with development, and these pipeflows would be expected to have an associated high velocity and kinetic energy which would likely initiate erosion. To prevent high erosion conditions, structures and energy reducer rings may be proposed for outlet facilities. These would aid in reducing storm flows to a non-erosive, pre-development rate. These controls or their alternatives would be evaluated by OCEMA prior to the issuance of grading permits for Antonio Parkway or the approval of area plans and/or tentative maps for the proposed land use plan (see the discussion of mitigation measures in Section 3.2.3). Additionally, the proposed storm drain outlets would be located near the flowline of Trabuco Creek to minimize disturbance to hillside and canyon terrain. With implementation of outlet controls, impacts associated with storm flow would be reduced to a level considered less than significant.

Surface Water Quality

Construction activities may increase the amount of erosion onsite which could increase the sedimentation in Trabuco and San Juan creeks. Additionally, construction equipment may also increase the chance of toxins, such as oil, gas, and solvents, entering the creeks. Urban contamination within stormwater discharges is a primary concern for the National Pollutant Discharge Elimination System (NPDES) stormwater discharge regulations that affect new construction sites (over 5 acres in size). Implementation of the land use plan and roadway extension, either individually or in combination, would require a permit from the state Regional Water Quality Control Board (RWQCB);

most likely a "general" permit would be sufficient for the construction process. General permits are available for development projects in California and must be applied for by filing a Notice of Intent (NOI) with the RWQCB at least 90 days prior to the onset of grading. Stormwater pollution prevention plans must be developed that use structural and nonstructural Best Management Practices (BMPs) to obtain reductions in urban pollutant loading to the "maximum extent practicable." BMPs, such as sand bag dikes, temporary desilting basins, and spillways, can reduce impacts during project construction to a level considered less than significant. An erosion control plan for the roadway extension and land use plan would be developed based on the use of temporary onsite detention basins in accordance with OCEMA criteria.

Upon completion of the project, land surface erosion would be significantly reduced due to the increase in pavement and other non-erodible surfaces. However, development activities, particularly commercial and industrial structures and roads, would increase the potential for stormwater runoff to transport surface water quality contaminants from roadway surfaces, lawns, driveways, parking lots, and other exposed structural and landscape surfaces into the storm drain system. Typical urban runoff contaminants (e.g., oil and grease, surfactants, heavy metals, solvents, pesticides, nutrients, or fecal coliform bacteria) could be expected within runoff reaching San Juan, Trabuco, and Horno creeks. Potential water quality effects resulting from urban runoff can best be discussed by examining the major types of pollutant constituents. The primary pollutant categories of concern include solids, nutrients, and organic matter; heavy metals; hydrocarbons; pesticides and trace organics; and bacteria.

Solids, Nutrients, and Organic Matter. Suspended solids, nutrients (nitrogen and phosphates), and oxygen-demanding organic matter are commonly present in urban runoff in high concentrations. The impact from these pollutants on the water quality in the receiving waters downstream of the project area would depend on the relative volume of urban runoff from the proposed development area and roadway in addition to the urban runoff from other existing and proposed developments upstream on the Trabuco, Horno, and San Juan creeks, in comparison with background flows from the remainder of the watershed.

Heavy Metals. Heavy metals (especially copper, lead, and zinc) are by far the most prevalent priority pollutants found in urban runoff. End-of-pipe stormwater concentrations may exceed U.S. Environmental Protection Agency (U.S. EPA) surface water quality criteria (e.g., freshwater acute and chronic toxicity levels) and drinking water standards in many instances throughout the U.S., according to results of the Nationwide Urban Runoff Program Study (U.S. EPA 1983). High instantaneous concentrations in themselves do not necessarily imply that the receiving water quality standards would be violated, since the comparison is typically made at the end of a site-specific mixing zone.

The impact of the proposed land development plan and the roadway on the ambient stormwater quality downstream of the study area is dependent upon upstream pollutant loadings and the relative amount of in-stream flow at the inflow points. It is anticipated, given the types of land uses proposed, that heavy metal concentrations, such as iron, lead, and selenium, would continue to be elevated in relation to drinking water criteria during

storm conditions and would add to an incremental water quality impact to regional cumulative conditions.

Hydrocarbons. Concentrations of hydrocarbons as a result of the proposed development and roadway are expected to increase over background conditions.

Pesticides and Trace Organics. The presence of pesticides and other trace organic chemical pollutants in typical urban runoff appears to be very site specific. Water quality standards, as defined in the applicable Basin Plans, are exceeded for individual pesticides and trace organics less frequently than for heavy metals in typical urban runoff. In the Nationwide Urban Runoff Program Study (U.S. EPA 1983) all pesticide measurements in urban runoff were substantially within drinking water criteria.

Bacteria. Coliform bacteria (indicators of pathogenic bacteria presence) are present at high levels in urban runoff and can be expected to exceed water quality standards for contact recreation during and immediately following storms in many surface waters, even where high degrees of dilution are provided (U.S. EPA 1983). Bacteria concentrations may be as much as two orders of magnitude (100 times) higher than those occurring in small rural streams (Davis 1979). Fecal coliform counts in urban runoff are typically in the tens to hundreds of thousands per 100 milliliter (ml) during warm weather conditions, with the national median being approximately 21,000 per 100 ml (U.S. EPA, 1983). During cold weather, fecal coliform counts are typically in the 1,000 per 100 ml range.

The project's contributions of the pollutants discussed above are expected to have a significant impact on water quality.

It is anticipated that suspended solids loading would decrease with development. Open space areas, such as agricultural areas and pastureland, typically produce more suspended solids on a per-acre basis than developed areas due to stabilization of the land by pavement and landscaping. Solids in urban runoff, however, are more likely to be higher in mineral and manmade products and may also contain other contaminants.

The proposed project would result in a short-term significant increase in the potential for erosion of the land surface and increase the potential for transport of the eroded soils into the stream systems. These impacts would result primarily from construction activities.

Associated with development of the land use plan is the potential reduction in the conveyance of sands downstream that provide for beach sand replenishment. As the land use plan is developed the site would drain as overland flow over the landscape or within the proposed streets and storm drains. Natural erosion that would otherwise occur, would be controlled with the engineered streets and storm drains. Thus, although the onsite runoff flow rates and volumes would increase because of the project, the ability of this runoff to contribute to onsite-generated erosion and sedimentation processes would be reduced. The significance of this reduced sedimentation and its effect on beach sand replenishment is dependent on the level of contribution the project site would have on overall beach

sand replenishment. Based on studies conducted by Simons, Li and Associates in 1984 and 1987 for the County of Orange, on the Arroyo Trabuco, it was found that the Cleveland National Forest was the main contributor for fine sediments. Even the Plano Trabuco, which has alluvial soil, was not identified as a significant contributor to the erosion and sedimentation processes in the Arroyo Trabuco. This was also the conclusion of the Plano Trabuco Urban Runoff Management Plan (URMP) approved by the Orange County Board of Supervisors in September 1984.

The findings related to the Plano Trabuco are relevant to the evaluation of the potential significance of this project on beach sand replenishment. Even though the Plano Trabuco which is characterized as being primarily alluvial deposits which would ultimately contribute to creation of sands, it was not found to be a major contributor. The project site is underlain by the Capistrano and Monterey formation, or older alluvium and landslide debris derived from those formations. These materials consist primarily of clay and silt with only minor amounts of sand or gravel. Approximately 150 acres (3 percent) of the development site is underlain by more granular terrace deposits. Runoff from this area located along the extremely northerly edge of the site is via a number of small tributaries on the east side of the Arroyo Trabuco, upstream from an area of extensive sand and gravel mining operations which includes extensive desilting facilities. Based on these findings the project is not expected to have significant impacts with regards to beach sand replenishment (personal communication, Andrew Stone, May 3, 1995).

However, of concern with the reduction in sediment transport from the study area is the potential increase in clean water to the accepting streams, which would increase the erosive potential of the runoff. However, downstream of the project site, the San Juan Creek is controlled. Therefore the potential for downstream erosion is remote.

Flooding

Because the development area and the roadway extension would include stormwater facilities to maintain flood flows at their natural volumes and velocities (e.g., detention basins, ring reducers, etc.), no impacts on downstream developments from flooding are anticipated.

The proposed development area lies outside the flood limits of Trabuco and San Juan creeks; however, the land use plan would place development adjacent to Horno Creek. The residential and commercial land uses proposed within the existing floodplain would be protected from flood inundation by the implementation of proposed channel improvements. As a result, no impacts on the project are anticipated from flood inundation by the San Juan, Horno, or Trabuco creeks.

Groundwater

As the project would not directly extract groundwater, remove an important groundwater recharge area, or contribute pollutants to the groundwater, it is not expected to have a significant impact on groundwater resources. Additionally, stormwater runoff from the study area would continue to discharge to San Juan Creek, recharging the basin, in the post-development condition.

3.2.3 MITIGATION MEASURES

Surface Water Patterns and Volumes

The following measures shall be implemented to ensure that all increases in runoff flows are controlled.

4. Prior to the recordation of a final tract/parcel map or prior to the issuance of any grading permits for the Antonio Parkway extension or the land use plan, whichever comes first, the following drainage studies shall be submitted to and approved by the Manager, Development Services:

    a. A drainage study of the roadway alignment or subdivision including diversions, offsite areas that drain onto and/or through the affected area(s), and justification of any diversions; and

    b. When applicable, a drainage study evidencing that proposed drainage patterns will not overload existing storm drains; and

    c. Detailed drainage studies indicating how the tract map grading, in conjunction with the drainage conveyance systems including applicable swales, channels, street flows, catch basins, storm drains, and flood water retarding, will allow building pads to be safe from inundation from rainfall runoff which may be expected from all storms up to and including the theoretical 100-year flood.

5. Prior to the recordation of a final tract/parcel map or prior to the issuance of any grading permits for development of the land use plan, whichever comes first, the landowner shall, in a manner meeting the approval of the Manager, EMA/Development Services:

    a. Design provisions for surface drainage; and

    b. Design all necessary storm drain facilities extending to a satisfactory point of disposal for the proper control and disposal of storm runoff; and

    c. Dedicate the associated easements to the County of Orange, if determined necessary.

Prior to the recordation of a final tract/parcel map, said improvements shall be constructed or financial security posted in a manner meeting the approval of the Manager, EMA/Development Services or his designee.

Surface Water Quality

The following mitigation measures will reduce the level of impact on water quality resulting from project implementation.

6. Prior to issuance of a grading permit for the development of the land use plan and the roadway extension compliance with the requirements of NPDES stormwater permits, the Orange County Drainage Area Management Plan, and the specific requirements of the county's stormwater permits (No. CA 8000180 and No. CA 0108740) for both construction and operation shall be demonstrated to the satisfaction of Manager, EMA/Development Services.

7. Concurrent with the preparation of the Area Plans for the land development area, the applicant shall design, and receive approval by the Director, OCEMA for, an urban runoff management plan. The urban runoff management plan shall contain, at a minimum, the following measures to mitigate stormwater runoff quality into Trabuco, San Juan, and Horno creeks:

   a. Incorporate applicable construction notes recommended in the Countywide Drainage Area Management Plan (DAMP) New Development Appendix.

   b. Incorporate other applicable measures from the State Municipal Best Management Practices (BMP) Manual, as necessary.

   c. Develop a long-term, post-construction water quality management plan, describing commitments to install and maintain structural facilities and to conduct non-structural BMPs consistent with the DAMP New Development Appendix.

   d. Include flood control improvements whose design is sensitive to surface water quality management.

8. Prior to issuance of grading permit for the land development area a Stormwater Pollution Prevention Plan (SWPPP) shall be prepared and approved by the RWQCB in accordance with the state's NPDES requirements.

Flooding

Mitigation Measures 4 and 5, listed above, address impacts associated with flooding.

Groundwater

No mitigation is required.

3.2.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

The proposed land use plan has the potential to significantly affect water quality downstream of the project area. The state's NPDES program requires that projects implement BMPs to reduce pollutant loading to the "maximum extent feasible," though not necessarily to a level considered less than significant. The project would be in full compliance with federal, state and local water quality programs; however, the incorporation of the mitigation measures listed above would not ensure that all potential water quality impacts to those three streams would be reduced to a level considered less than significant.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

TENTATIVE ADDENDUM NO. 4
TO
ORDER NO. 97-52

WASTE DISCHARGE AND WATER RECYCLING REQUIREMENTS
FOR THE
SOUTH ORANGE COUNTY RECLAMATION AUTHORITY
ORANGE COUNTY

The California Regional Water Quality Control Board, San Diego Region (hereinafter Regional Board), finds that:

1. Order No. 97-52 prescribes Waste Discharge and Water Recycling Requirements for the production and purveyance of recycled water by member agencies of South Orange County Reclamation Authority (SOCWA).

2. SOCWA (hereinafter Discharger) on behalf of one of its member agencies, the Santa Margarita Water District (SMWD), submitted a Report of Waste Discharge for an amendment of Order No. 97-52 to established requirements for the discharge from the Horno Urban Water Recovery Facility (UWRF).

3. The Horno UWRF is located at the southern end of the Ladera Ranch planned community, in Tract 15793 within the Horno Creek Hydrologic Subarea (HAS 901.27) of the San Juan Creek Watershed. The facility is designed to divert urban runoff flows, which are collected in the Horno Water Quality Basin, to the SMWD's recycled water distribution system for subsequent landscape irrigation use. The Horno Water Quality Basin is owned and operated by the County of Orange.

4. The urban runoff flows will be diverted through the Horno Water Quality Basin, and flow through seven acres of constructed wetlands, owned by Ladera Ranch Homeowners Association, prior to blending with recycled water. The diverted urban runoff will provide approximately 180 acre-feet of supplemental water during dry weather months.

5. The sample results of water collected at the point of diversion between November 2004 and April 2005 was reported having average concentrations of the following constituents in milligrams per liter (mg/L):

Constituent	Average Concentration	Constituent	Average Concentration
Total Dissolved Solids	686	Nitrate (as N)	0.6
Boron	0.22	Sulfate	349
Sodium	57	Fluoride	0.275
Chloride	48.5	Total Phosphorus (as P)	0.4

6. The Regional Board has notified all known interested parties of its intent to amend waste discharge and recycling requirements.

7. A Notice of Exemption for the Horno Basin Urban Water Recovery Facility was filed by SMWD and posted by the Clerk for the Board of Supervisors, County of Orange on September 29, 2006 in accordance with section 10562(c)(2) of Title 14, *California Code of Regulations*, Chapter 3, *Guidelines for Implementation of the California Environmental Quality Act.*

8. The Regional Board has considered all water resource related environmental factors associated with the proposed discharge of waste.

9. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, that the following requirements are added to Monitoring and Reporting Program No. 97-52 as Provision K.

Provision K. Horno Urban Water Recovery Facility

1. The Santa Margarita Water District (SMWD) shall monitor and sample diversion water either prior to, or after mixing with, recycled water to ensure compliance with effluent limitations. The point(s) of compliance shall be either prior to mixing, or at the confluence of mixing with recycled water. The SMWD shall provide the Regional Board with the flow rate and concentrations of effluent constituents consistent with those listed in Table A-1 of this Monitoring and Reporting program (M&RP), with the exception of Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS), and Odor.

2. The SMWD shall monitor and sample effluent from the recycled water facilities at the point of discharge, prior to blending with diversion water. The effluent shall not exceed the effluent limitations listed in Table A-1 of this M&RP.

3. The SMWD shall sample and report the results of sampling to SOCWA at a frequency consistent with Reporting Requirement I.2 of this M&RP.

4. SOCWA shall submit reports to the Regional Board in accordance with Reporting Requirement I.3 of this M&RP.

I, John H. Robertus, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Addendum adopted by the California Regional Water Quality Control Board, San Diego Region, on October 8, 2008.

TENTATIVE
JOHN H. ROBERTUS
Executive Officer

List of Products Applied in Ladera Ranch in June, 2026

Ordered by overall concern in this community-exposure context (highest first). 'Tox. Tier' reflects the EPA label signal word (Caution / Danger), which is an acute-toxicity indicator; the Carcinogen Classification column is the chronic axis. Read both together.

Product	Active Ingredient(s)	EPA Reg. No.	Applicator	Tox. Tier	Carcinogen Class.	Locations / Dates (June 2026)	Notes
Avalon Gopher Grain Bait	Strychnine alkaloid 0.50%	5042-34	Animal Pest Mgmt	**DANGER (acute)**	Not classified	All APM sites; 06/03, 06/17 (+alt)	Burrow/bait-station only; lethal acute poison but near-zero bystander exposure
Fumitoxin	Aluminum phosphide 55%	72959-1	Animal Pest Mgmt	**DANGER (acute)**	Not classified	All APM sites; 06/03, 06/17 (+alt)	Burrow fumigant (phosphine gas); acute risk, not a chronic/cancer pathway
Weevil-cide	Aluminum phosphide 60%	70506-13	Animal Pest Mgmt	**DANGER (acute)**	Not classified	All APM sites	Burrow fumigant; same profile as above
ZP Rodent Oat Bait	Zinc phosphide 2%	12455-102	Animal Pest Mgmt	**CAUTION (acute)**	Not classified	All APM sites (squirrel/meadow mice)	Bait; releases phosphine in stomach; acute only
Termidor S.C.	Fipronil 9.1%	7969-210	Animal Pest Mgmt	**CAUTION**	Possible human carcinogen (EPA Grp C; thyroid tumors)	Ladera Ranch master + Pools/Clubhouses; multiple June dates	HIGHEST chronic-concern item: persistent + carcinogen classification
Tempri d FX	Imidaclopri d 21.0% +	432-1544	Animal Pest	**CAUTION**	Neonic: endocrine/developm	Master, Pools/Clubho	Neonicotinoid; persistent,

Product	Active Ingredient(s)	EPA Reg. No.	Applicator	Tox. Tier	Carcinogen Class.	Locations / Dates (June 2026)	Notes
	Beta-cyfluthrin 10.5%		Mgmt		ental; not classified carcinogen	uses, Dog Park, Christopher Homes	mobile; already in your file
Mallet 2f	Imidacloprid	228-695	Aguilar Plant Care	**CAUTION**	Neonic: endocrine/developmental	~300 citrus trees community-wide (06/05) + Covenant Hills Club (06/11)	Second imidacloprid source — cumulative exposure point
Alpine WSG	Dinotefuran 40.0%	499-561	Animal Pest Mgmt	**CAUTION**	Neonic: endocrine/developmental	Ladera Ranch master (fire ant); multiple June dates	Neonicotinoid; high water solubility/mobility; in your file
Wisdom Lawn Granular	Bifenthrin 0.2%	5481-521	Animal Pest Mgmt	**CAUTION**	Possible human carcinogen (EPA Grp C)	All APM sites incl. Dog Park, Pools/Clubhouses	Pyrethroid; possible carcinogen; broadcast granular = higher contact
Demand C.S.	Lambda-cyhalothrin 9.7%	100-1066	Animal Pest Mgmt	**CAUTION**	Not classifiable / suggestive	Master, Dog Park (fleas), Pools/Clubhouses	Pyrethroid; developmental neurotox concerns
Tempo SC	Beta-cyfluthrin	432-1363	Aguilar Plant Care	**CAUTION**	Pyrethroid; not classified carcinogen	~300 citrus community-wide + Covenant Hills Club	Pyrethroid; second cyfluthrin source
Onslaught FastCap	Esfenvalerate 6.40%	1021-2574	Animal Pest Mgmt	**DANGER**	Pyrethroid; not classified carcinogen	Ladera Ranch master + Pools/Clubho	Pyrethroid; Danger label driven by

Product	Active Ingredient(s)	EPA Reg. No.	Applicator	Tox. Tier	Carcinogen Class.	Locations / Dates (June 2026)	Notes
						uses (general insect)	acute, not chronic
Lifeline Herbicide	Glufosinate-ammonium	70506-310	O'Connell Landscape	**CAUTION**	Developmental/neurotox; not classified carcinogen	Community common areas — spot spray cracks, sidewalks, slopes, tree wells; 06/03-05, 09-12, 16-19, 23-26, 06/30-07/03	In your file (DPR Case 2021-0002); broadcast-adjacent spot spray in play-accessible areas
Cadet 3 All-Weather Blox	Cholecalciferol 0.075%	12455-162	Animal Pest Mgmt	**CAUTION**	Vitamin D3; not a carcinogen	All APM sites (rat)	Bait-station; low broad concern
P.I. Contact	Pyrethrins 0.50% + Piperonyl butoxide 4%	499-444	Animal Pest Mgmt	**CAUTION**	PBO: suggestive (limited); pyrethrins low	Master, Dog Park, Pools/Clubhouses	Botanical pyrethrin; PBO is the watch-item
Conserve SC	Spinosad	62719-291	Aguilar Plant Care	**CAUTION**	Not classified; low concern	~300 citrus community-wide + Covenant Hills Club	Used in some organic-certified contexts; low concern
IronFist Slug & Snail Bait	Sodium ferric EDTA 2.0%	67702-32-87865	Animal Pest Mgmt	**CAUTION**	Low concern	Master + Pools/Clubhouses (snail)	Iron-based; low toxicity
Atrimmec	Dikegulac-sodium	2217-776	O'Connell Landscape	**CAUTION**	Plant growth regulator; not classified carcinogen	Ladera common areas; 06/02-04, 09-11, 16-	PGR (slows plant growth); low human-health

Product	Active Ingredient(s)	EPA Reg. No.	Applicator	Tox. Tier	Carcinogen Class.	Locations / Dates (June 2026)	Notes
						18, 23-25, 06/30-07/02	concern
MycoJect Ultra HP	Oxytetracycline	7946-35	(not in online set — resident photo)	**CAUTION**	Antibiotic; not a carcinogen	27082 O'Neill Dr (Laurel Vista); 06/09	FOURTH applicator — NOT in posted online notices; trunk injection; low concern but evidences gap in published record

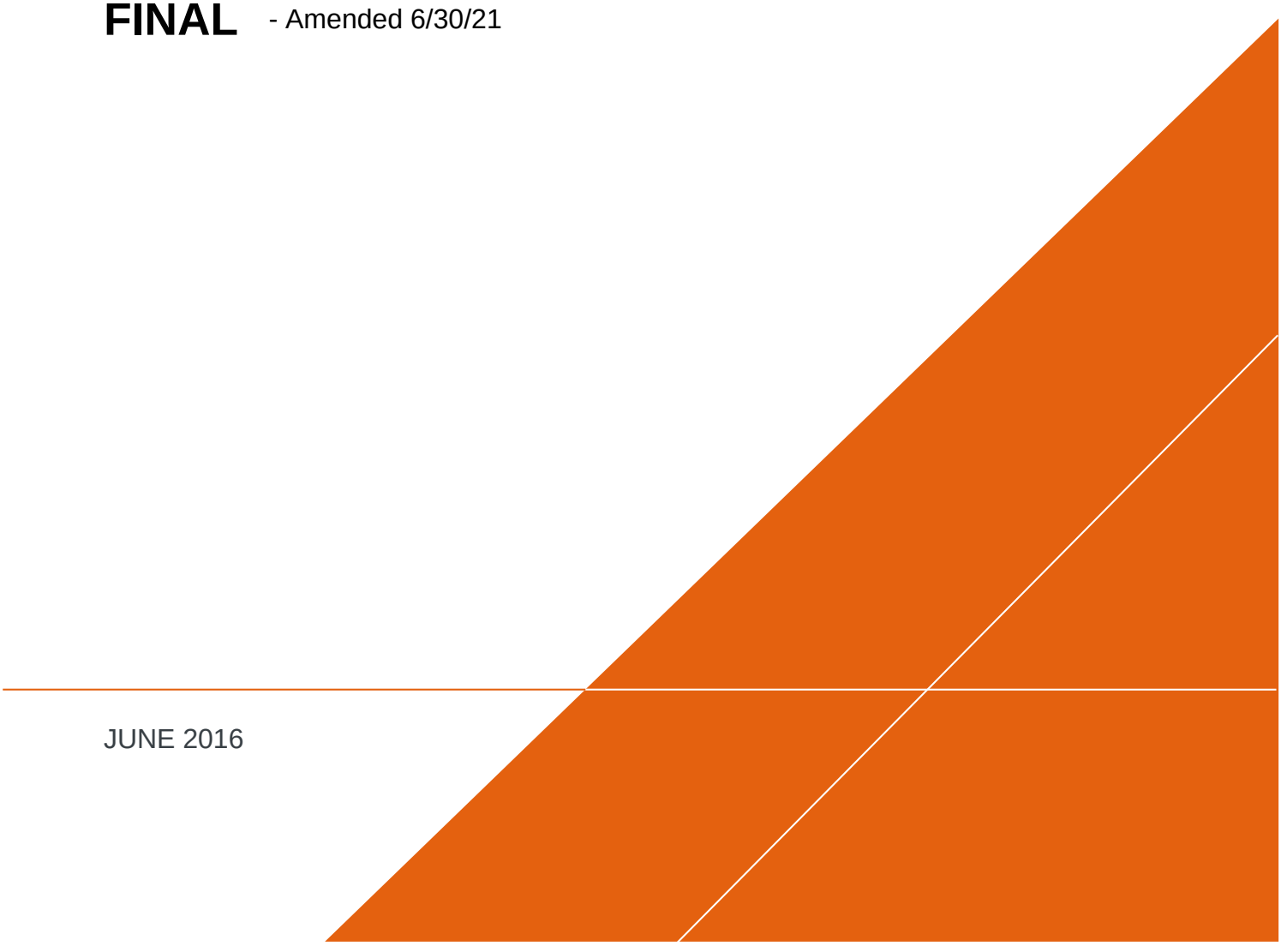
Santa Margarita Water District

ARCADIS Design & Consultancy for natural and built assets

2015

URBAN WATER MANAGEMENT PLAN

FINAL - Amended 6/30/21



JUNE 2016

2015 URBAN WATER MANAGEMENT PLAN

Santa Margarita Water District

FINAL



Sarina Sriboonlue, P.E.

Staff Environmental Engineer

Prepared for:

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Date:

June 2016

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ACRONYMS AND ABBREVIATIONS

20x2020	20% Water Use Reduction in GPCD by Year 2020
3A	3A Water Reclamation Plant
Act	Urban Water Management Planning Act
AF	Acre-Feet
AFY	Acre-Feet per Year
AMI	Automated Meter Reading
AMP	Allen McColloch Pipeline
AMR	Automatic Meter Reading
APW	Advanced Purified Water
AWWA	American Water Works Association
Biops	Biological Opinions
BMP	Best Management Practice
CCC	California Coastal Commission
CCF	Hundred Cubic Feet
CDR	Center for Demographic Research
CEQA	California Environmental Quality Act
CII	Commercial/Industrial/Institutional
CIMIS	California Integrated Management Information System
County	County of Orange
CRA	Colorado River Aqueduct
CVP	Central Valley Project
CWVD	Cucamonga Valley Water District
CWRP	Chiquita Water Reclamation Plant
CY	Calendar Year
Delta	Sacramento-San Joaquin River Delta
DDW	Department of Drinking Water
District	Santa Margarita Water District
DMM	Demand Management Measure
DOF	Department of Finance
DU	Dwelling Unit
DVL	Diamond Valley Lake
DWR	Department of Water Resources
EIR	Environmental Impact Report
EOCF #2	East Orange County Feeder No. 2
ETo	Evapotranspiration
ETWD	El Toro Water District
FY	Fiscal Year
GCM	General Circulation Model
GPCD	Gallons per Capita per Day

GRF	Groundwater Recovery Facility
GSWC	Golden State Water Company
HECW	High Efficiency Clothes Washer
HET	High Efficiency Toilet
I.D.	Improvement Districts
IEUA	Inland Empire Utilities Agency
IRP	Integrated Water Resource Plan
IRWD	Irvine Ranch Water District
IWA	International Water Association
LBCWD	Laguna Beach County Water District
LRP	Local Resources Program
LTFP	Long-Term Facilities Plan
MAF	Million Acre-Feet
Metropolitan	Metropolitan Water District of Southern California
MNWD	Moulton Niguel Water District
MGD	Million Gallons per Day
MHI	Median Household Income
MWDOC	Municipal Water District of Orange County
NDMA	N-nitrosodimethylamine
OCWD	Orange County Water District
OCWRP	Oso Creek Water Reclamation Plant
PPCP	Pharmaceuticals and Personal Care Products
Poseidon	Poseidon Resources LLC
RHNA	Regional Housing Needs Assessment
RMV	Rancho Mission Viejo
SBx7-7	Senate Bill 7 as part of the Seventh Extraordinary Session
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCWD	South Coast Water District
SCP	South County Pipeline
SDCWA	San Diego County Water Authority
SDP	Seawater Desalination Program
SJBA	San Juan Basin Authority
SOCWA	South Orange County Wastewater Authority
Study	Colorado River Basin Water Supply and Demand Study
SWP	State Water Project
SWRCB	California State Water Resources Control Board
TCWD	Trabuco Canyon Water District
TDS	Total Dissolved Solids
UV	Ultraviolet

UWMP	Urban Water Management Plan
WBIC	Weather Based Irrigation Controller
WEROC	Water Emergency Response Organization of Orange County
WRP	Water Reclamation Plant
WSAP	Water Supply Allocation Plan
WSDM	Water Surplus and Drought Management
WSO	Water Systems Optimization

1 INTRODUCTION

1.1 Urban Water Management Plan Requirements

Water Code Sections 10610 through 10656 of the Urban Water Management Planning Act (Act) require every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet (AF) of water annually to prepare, adopt, and file an Urban Water Management Plan (UWMP) with the California Department of Water Resources (DWR) every five years in the years ending in zero and five. The 2015 UWMP updates are due to DWR by July 1, 2016.

This UWMP provides DWR with a detailed summary of present and future water resources and demands within the Santa Margarita Water District's (District) service area and assesses the District's water resource needs. Specifically, the UWMP provides water supply planning for a 25-year planning period in five-year increments and identifies water supplies needed to meet existing and future demands. The demand analysis must identify supply reliability under three hydrologic conditions: a normal year, a single-dry year, and multiple-dry years. The District's 2015 UWMP updates the 2010 UWMP in compliance with the requirements of the Act as amended in 2009, and includes a discussion of:

- Water Service Area and Facilities
- Water Sources and Supplies
- Water Use by Customer Type
- Demand Management Measures
- Water Supply Reliability
- Planned Water Supply Projects and Programs
- Water Shortage Contingency Plan
- Recycled Water Use

Since the original Act's passage in 1983, several amendments have been added. The most recent changes affecting the 2015 UWMP include Senate Bill 7 as part of the Seventh Extraordinary Session (SBx7-7) and SB 1087. SBx7-7, or the Water Conservation Act of 2009, is part of the Delta Action Plan that stemmed from the Governor's goal to achieve a 20 percent statewide reduction in urban per capita water use by 2020 (20x2020). Reduction in water use is an important component of the Delta Action Plan which aims to sustainably manage the Bay Delta and reduce conflicts between environmental conservation and water supply; it is detailed in Section 3.2.2. SBx7-7 requires each urban retail water supplier to develop urban water use targets to achieve the 20x2020 goal and the interim ten percent goal by 2015. Each urban retail water supplier must include in its 2015 UWMPs the following information from its target-setting process:

- Baseline daily per capita water use
- 2020 urban water use target

- 2015 interim water use target compliance
- Compliance method being used along with calculation method and support data
- An implementation plan to meet the targets (if necessary)

The other recent amendment, made to the UWMP on September 19, 2014, is set forth by SB 1420, Distribution System Water Losses. SB 1420 requires water purveyors to quantify distribution system losses for the most recent 12-month period available. The water loss quantification is based on the water system balance methodology developed by the American Water Works Association (AWWA).

The sections in this UWMP correspond to the outline of the Act, specifically Article 2, Contents of Plans, Sections 10631, 10632, and 10633. The sequence used for the required information, however, differs slightly in order to present information in a manner reflecting the unique characteristics of the District's conveyance system. The UWMP Checklist has been completed, which identifies the location of Act requirements in this Plan and is included in Appendix A. This is an individual UWMP for a retail agency, as shown in Tables 1-1 and 1-2. Table 1-2 also indicates the units that will be used throughout this document.

Table 1-1: Plan Identification

Plan Identification			
Select Only One	**Type of Plan**		**Name of RUWMP or Regional Alliance**
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☑	Water Supplier is also a member of a Regional Alliance	Orange County 20x2020 Regional Alliance
☐	**Regional Urban Water Management Plan (RUWMP)**		
NOTES:			

Table 1-2: Plan Identification

Agency Identification	
Type of Agency	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year	
☐	UWMP Tables Are in Calendar Years
☑	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Date that the Fiscal Year Begins (mm/dd)	
07/01	
Units of Measure Used in UWMP	
Unit	AF
NOTES:	

1.2 Agency Overview

The District, established in December 1964 under provisions of the California Water District Law, includes 62,674 acres in the southeastern corner of Orange County. The governing body of the District (and all improvement districts therein) is a five-member Board of Directors, publicly elected at large for staggered four-year terms. The District's responsibilities are:

- Distribution of potable water for consumption and fire protection.
- Collection and treatment of wastewater.
- Distribution of recycled water along with the collection and distribution of urban return flows for irrigation purposes.

The current members of the District's Board of Directors are:

- Charley Wilson, President
- Charles T. Gibson, Vice-President
- Justin McCusker, Director and Engineering and Operations Committee Chair
- Saundra F. Jacobs, Director and Water Policy and Innovation Committee Chair
- Betty H. Olson, Ph.D., Director and Finance and Administration Committee Chair

The District receives its water from three main sources: imported drinking water from the Municipal Water District of Orange County (MWDOC), non-domestic urban return flows, and treated wastewater. MWDOC is Orange County's wholesale supplier and is a member agency of the Metropolitan Water District of Southern California (Metropolitan). The District also receives irrigation water from Rancho Mission Viejo and neighboring agencies. The regional location of the District is shown on Figure 1-1.

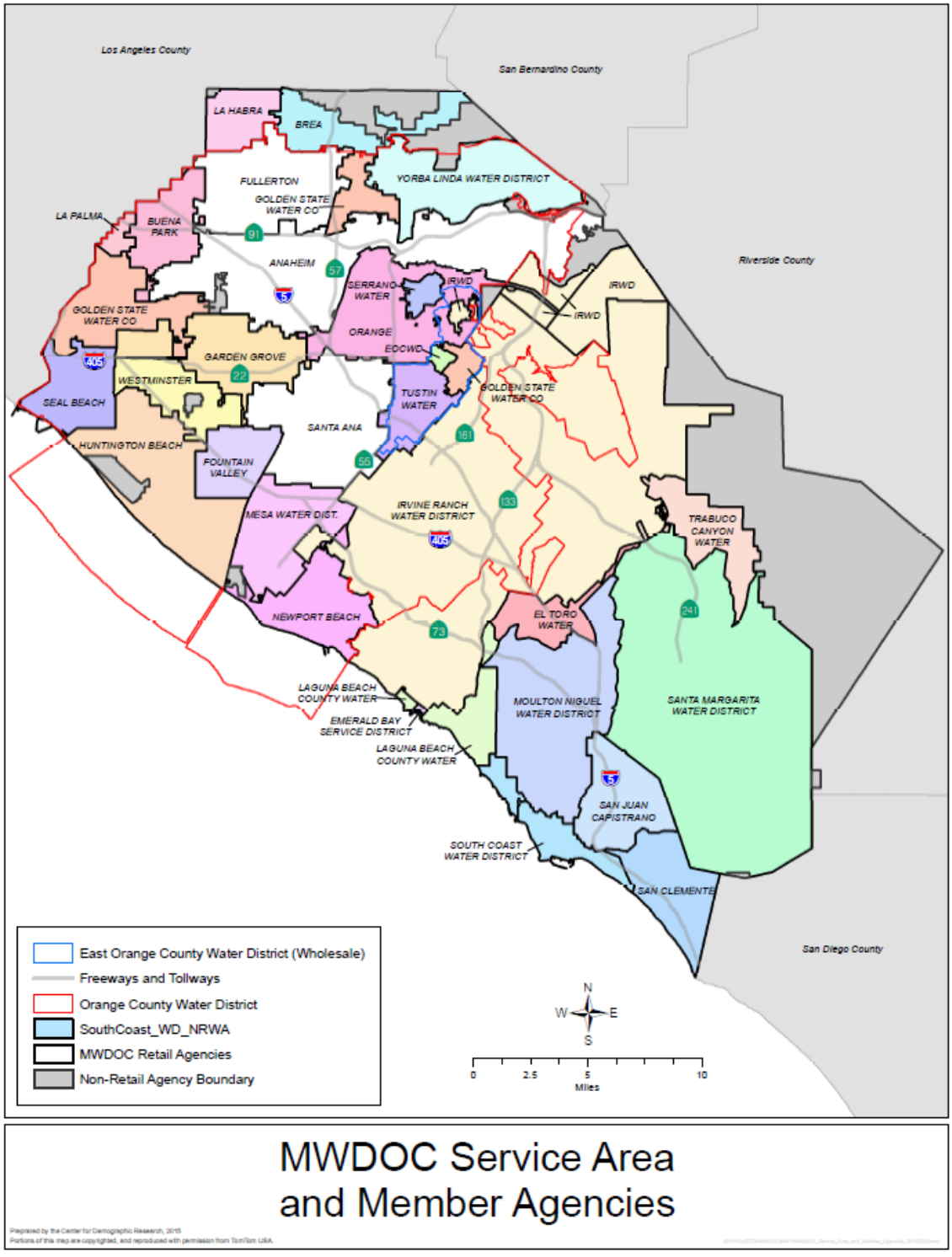


Figure 1-1: Regional Location of Santa Margarita Water District

1.3 Service Area and Facilities

1.3.1 Santa Margarita Water District Service Area

The District provides water and wastewater treatment services to approximately 160,000 people within an area of 62,674 acres. The District is bounded on the north by El Toro Water District (ETWD), Irvine Ranch Water District (IRWD), and Trabuco Canyon Water District (TCWD), on the east by the Cleveland National Forest, on the south by the City of San Clemente and the United States Marine Corps' Camp Pendleton, and on the west by the City of San Juan Capistrano and Moulton Niguel Water District (MNWD). The District is responsible for inter-agency coordination and long range planning to meet future water supply and wastewater treatment needs for its service area as shown on Figure 1-2.

The District is divided into eight basic Improvement Districts (I.D.). These districts were formed to meet the needs of specific portions of the district based upon such factors as land use, topography, land ownership boundaries, and the timing and characteristics of water supply and wastewater treatment needs. The Cities of Mission Viejo, Rancho Santa Margarita and the unincorporated communities of Coto de Caza, Las Flores and Ladera Ranch as well as the remaining undeveloped portion of the Rancho Mission Viejo (RMV) are within the District's service boundary.

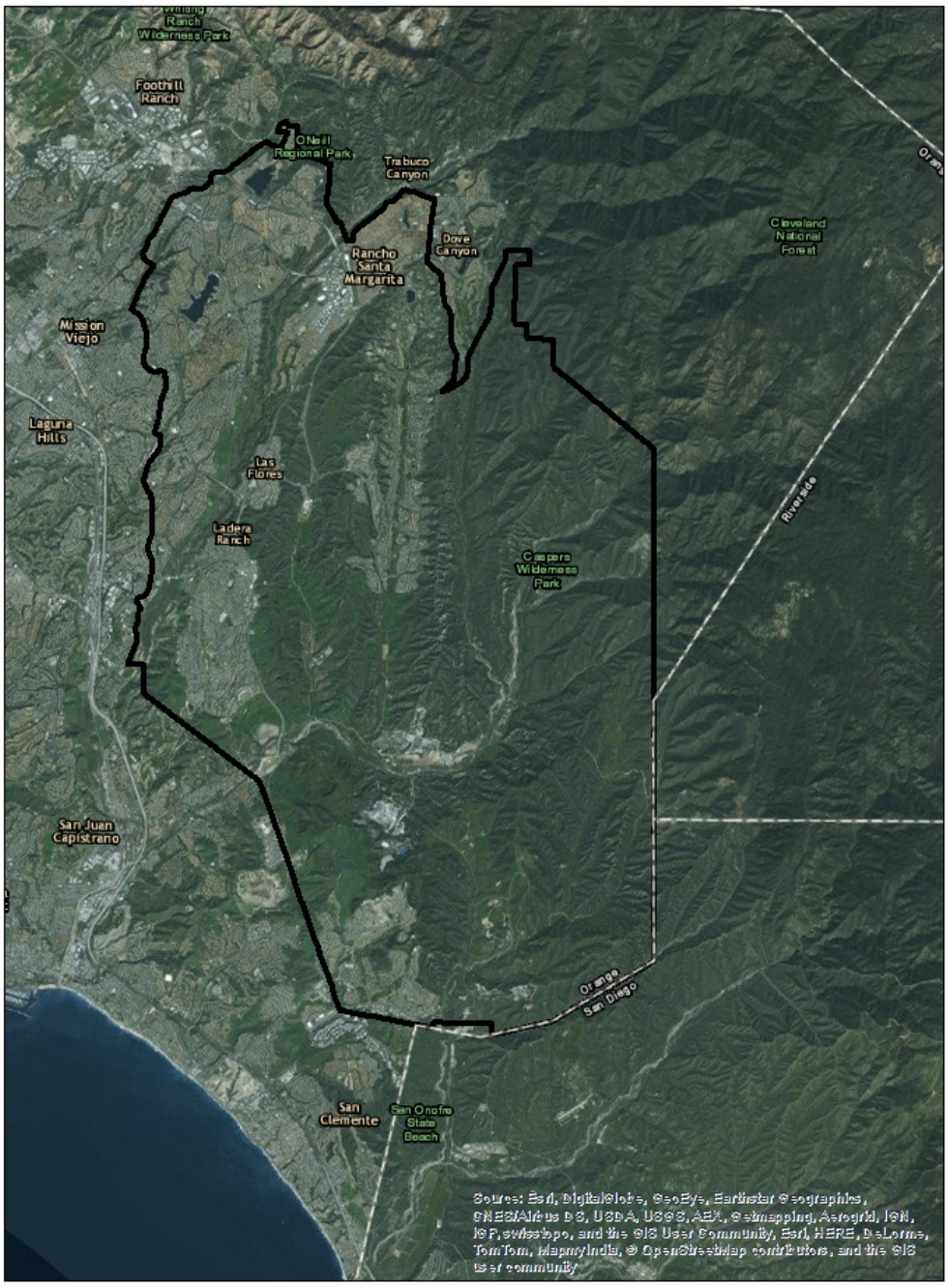


Figure 1-2: Santa Margarita Water District Service Area

1.3.2 Santa Margarita Water District Water Facilities

The District's system consists of approximately 1,525 miles of water (potable and recycled) and sewer lines, 31 potable water tank reservoirs, 2 emergency storage potable water reservoirs, 7 recycled water tank reservoirs, and 2 open-air recycled water reservoirs as shown in Appendix I. Nearly all of the District's water supply is purchased from Metropolitan, which delivers water to the region from Northern California via the State Water Project (SWP) and from the Colorado River via the Colorado River Aqueduct (CRA). Water from both sources is treated at either the Diemer Filtration Plant in Yorba Linda or the Baker Treatment Plant in Irvine (scheduled to open 10/16) prior to delivery to the District. The system connections and water volume supplied are summarized in Table 1-3, and the wholesalers informed of this water use as required are displayed in Table 1-4.

Table 1-3: Public Water Systems

Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Total Volume of Water Supplied 2015 (AF)
CA3010101	Santa Margarita Water District	54,907	34,405
	TOTAL	54,907	34,405
NOTES: Customer Relations records retrieved March 2016			

Table 1-4: Water Supplier Information Exchange

Retail: Water Supplier Information Exchange
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
MWDOC
NOTES:

2 DEMANDS

2.1 Overview

Since the last UWMP update, southern California's urban water demand has been largely shaped by the efforts to comply with SBx7-7. This law requires all California retail urban water suppliers serving more than 3,000 acre-feet per year (AFY) or 3,000 service connections to achieve a 20 percent water demand reduction (from a historical baseline) by 2020. The District has been actively engaged in efforts to reduce water use in its service area to meet the 2015 interim 10 percent reduction and the 2020 final water use target. Meeting this target is critical to ensure the District's eligibility to receive future state water grants and loans.

In April 2015, Governor Brown issued an Emergency Drought Mandate as a result of one of the most severe droughts in California's history, requiring a collective reduction in statewide urban potable water use of 25 percent by February 2016, with each agency in the state given a specific reduction target by DWR. In response to the Governor's mandate, the District is carrying out more aggressive conservation efforts. It is also implementing higher (more restrictive) stages of its water conservation ordinance in order to achieve its State-mandated demand reduction target of 23 percent (reduced from 24 percent in March 2016) set for the District itself.

In addition to local water conservation ordinances, the District has partnered with MWDOC on educational programs, indoor/outdoor retrofit rebates, and training. These efforts have been made to achieve the statewide water conservation ordinances that require limited landscape watering, serving water in restaurants and bars only when requested, and reducing the amount of laundry cleaned by hotels. Further discussion on the District's water conservation ordinance is covered in Section 5 Water Shortage Contingency Plan.

This section analyzes the District's current water demands by customer type, factors that influence those demands, and projections of future water demands for the next 20 years. In addition, to satisfy SBx7-7 requirements, this section provides details of the District's SBx7-7 compliance method selection, baseline water use calculation, and 2015 and 2020 water use targets.

2.2 Factors Affecting Demand

Water demands within the District's service area are dependent on many factors such as local climate conditions and the evolving hydrology of the region, demographics, land use characteristics, and economics. In addition to local factors, the areas that serve as southern California's imported water sources are also experiencing drought conditions that impact availability of current and future water supplies.

2.2.1 Climate Characteristics

The District is located within the South Coast Air Basin (SCAB) that encompasses all of Orange County, and the urban areas of Los Angeles, San Bernardino, and Riverside counties. The SCAB climate is characterized by southern California's "Mediterranean" climate: a semi-arid environment with mild winters,

warm summers and light rainfall. On a global scale average temperatures are rising; the result is increased water usage required for irrigation and outdoor landscape to offset the evapotranspiration (ETo) from local soil and vegetation. ETo is the loss of water from a vegetative surface from a combination of plant transpiration (loss of water as vapor through plant leaves) and soil evaporation, movement of water from soil to air. Table 2-1 details the growing total ETo losses over a 12-month period in 2010 and 2015 for the same area. The difference in ETo over this five year period is 0.59 inches for the region surrounding the Irvine station. A higher ETo indicates that more water is being pulled from soil and vegetation to the atmosphere, thus increasing the amount needed to maintain existing irrigation patterns and uses.

Table 2-1: Climate Characteristics

	2010 Standard Monthly Average ETo (inches) [1]	2015 Standard Monthly Average ETo (inches) [1]
Jan	2.18	2.38
Feb	2.49	2.58
Mar	3.67	3.79
Apr	4.71	4.78
May	5.18	5.32
Jun	5.87	5.75
Jul	6.29	6.34
Aug	6.17	6.17
Sep	4.57	4.76
Oct	3.66	3.60
Nov	2.59	2.63
Dec	2.25	2.12
Annual	**49.63**	**50.22**

[1] CIMIS Station #75, Irvine, California from October 1987 to Present

The low volume of local rainfall has had a limited impact on reducing demand for the District. Water that infiltrates into the soil may enter groundwater supplies depending on the local geology. However, due to the large extent of impervious cover in southern California, most rainfall runoff quickly flows to a system of manmade storm drains and channels that lead to the San Juan Creek and then to the ocean.

Metropolitan's water supplies come from the SWP and the CRA, influenced by climate conditions in northern California and the Colorado River Basin, respectively. Both regions have been suffering from multi-year drought conditions with record low precipitation which directly impact water supplies to southern California.

2.2.2 Demographics

The Center for Demographic Research (CDR) estimates that the District had a December 2015 population of 156,949. The District has seen moderate growth within the service area, and its population is projected to increase 27 percent by 2035. Anticipated growth comes from continued development of Rancho Mission Viejo in the southeast portion of the service area.

The projected growth forecasted in the 2010 UWMP was not experienced due to the economic downturn that occurred in 2008-09. Table 2-2 shows the population projections in five-year increments out to 2040 within the District's service area.

Table 2-2: Population – Current and Projected

Retail: Population - Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040
	156,949	169,628	187,826	194,951	199,028	200,026
NOTES: Source: Center for Demographic Research						

2.2.3 Land Use

The District is made up of primarily residential communities with common area landscaping. Residential is comprised of single and multi-family dwellings. Retail is concentrated in central community areas and the minor amount of manufacturing that occurs is within the Rancho Santa Margarita Business Park and the Talega Business Park.

The District was notified by the County of Orange (County) on February 26, 2003, in accordance with Water Code Section 10910 of its Notice of Preparation of a draft Environmental Impact Report (EIR) #589 for a development known as the Ranch Plan. Located within the District's current service territory in Improvement Districts 4C, 4E, 5, and 6, the Ranch Plan was scheduled to begin development in 2013 and included a mix of residential and commercial development in six planning areas. The planning areas represent 5,879 of the 22,815 acres of land owned by Rancho Mission Viejo. The remaining land between and surrounding the development will remain as open space. The proposed residential developments will consist of 14,000 units with 6,000 of the units being age-restricted units which have a lower water demand due to typical usage patterns, and 1,329 units of affordable housing. The proposed commercial development is estimated to be 5.2 million square feet. There is projected to be 130 acres of urban activity center uses, 258 acres of business park uses, 39 acres of neighborhood retail development, and up to two golf courses. The first planning area, the Village of Sendero, is currently being completed and the other five planning areas will be developed over the next 20 years (Hall & Foreman, 2012).

2.3 Potable Water Use by Customer Type

An agency's potable water consumption can be projected by understanding the type of use and customer type creating the demand. Developing local water use profiles helps to identify quantity of water used, and by whom within the agency's service area. A comprehensive profile of the agency's service area enables the impacts of water conservation efforts to be assessed and to project the future benefit of water conservation programs. Recycled water is discussed in Section 6.

The following sections of this UWMP provide an overview of the District's potable water consumption by customer account type as follows:

- Single-family Residential
- Multi-family Residential
- Commercial
- Irrigation
- Other (Construction/District Usage/Lakefill)

Other water uses including sales to other agencies and non-revenue water are also discussed in this section.

2.3.1 Overview

There are currently 54,907 active and inactive customer service connections in the District's potable water distribution system with all existing connections metered. Approximately 69 percent of the District's potable water demand is residential and about 21 percent of the total potable water demand is dedicated landscape. Table 2-3 contains a summary of the District's total potable water demand in the fiscal year (FY) of 2014-15 for potable water volumes.

Table 2-3: Demands for Potable Water - Actual (AF)

Retail: Demands for Potable Water - Actual			
Use Type	2015 Actual		
	Additional Description	Level of Treatment When Delivered	Volume
Single Family		Drinking Water	15,904
Multi-Family		Drinking Water	2,598
Commercial		Drinking Water	1,012
Landscape		Drinking Water	5,650
Other	Alternative Sourced	Drinking Water	633
Losses		Drinking Water	1,114
		TOTAL	26,910
NOTES: Volumes are pulled from the District's billing database. Losses are calculated as 4 percent of the imported volume (See Section 2.3.5).			

2.3.2 Non-Residential

Non-residential use includes commercial and dedicated landscape demands. Commercial potable water use accounts for 4 percent of total water demands and dedicated landscape accounts for 21 percent of total water demand. The District has a mix of commercial uses (markets, restaurants, etc.), public entities (schools, fire stations and government offices), office complexes, and light industrial.

2.3.3 Other Uses

The District's service area contains two manmade, recreational lakes that have historically used potable water to maintain their water levels. Lago Santa Margarita, located in Rancho Santa Margarita, has a five year average consumption of 35 AFY based on 2010-15 data to maintain the water level. The District projects that this volume is required to maintain the water level into the foreseeable future. Lake Mission Viejo, located in Mission Viejo, has a five year average consumption of 210 AFY based on 2010-15 data to maintain the water level. This District is currently planning a project to convert Lake Mission Viejo lakefill from potable water use to recycled water use.

2.3.4 Sales to Other Agencies

The District occasionally sells imported water to neighboring agencies. In FY 2014-15, the District sold 218 AF of potable water to Trabuco Canyon Water District.

2.3.5 Non-Revenue Water

Non-revenue water is defined by the International Water Association (IWA) as the difference between distribution systems input volume (i.e. production) and billed authorized consumption. Non-revenue water consists of three components: unbilled authorized consumption (e.g. hydrant flushing, firefighting, and blow-off water from well start-ups), real losses (e.g. leakage in mains and service lines), and apparent losses (unauthorized consumption and metering inaccuracies).

In 2015, the District contracted with Water Systems Optimization (WSO) to conduct a water loss audit per AWWA methodology for the District to understand the relation between water loss and revenue losses. This audit was developed by the IWA Water Loss Task Force as a universal methodology that could be applied to any water distribution system. This audit meets the requirements of SB 1420 that was signed into law in September 2014. Understanding and controlling water loss from a distribution system is an effective way for the District to achieve regulatory standards and manage their existing resources

Table 2-4 below is a result of the AWWA Water Audit completed for the District and the 2015 UWMP. The water loss summary was calculated over a one-year period (7/1/13 – 6/30/14) from available data and the methodology explained above. The volume of water loss calculated for this period represents 4.7 percent of the District's annual water supplied. Given the low volume of losses, the District will be focused on developing a water loss control program in order to continue to run an efficient system.

Table 2-4: Water Loss Audit Summary (AF)

Retail: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss
07/2013	1,265
NOTES:	

2.4 Demand Projections

Demand projections were developed for the District as part of the Santa Margarita Water District Water Demand Forecast that forecasted average demand for each major customer class based on an econometric model for 2015 to 2035 (Santa Margarita Water District Water Demand Forecast, M.Cubed, January 2016). Average demand was developed from the baseline average demand for each customer class (weather-normalized 2014 demand), projected growth of residential units from the District's FY 2015-16 CIP, and non-residential use from its historically linear relationship with residential. The average demand forecast was then adjusted to show the effects on demand from efficiency standards, expansion of District conservation programs, and changes in water and sewer rates. The adjustments for the effects of efficiency standards and District conservation programs are estimated with the Alliance for Water Efficiency's Water Conservation Tracking Tool. The average water use projections are combined with forecasts of residential and non-residential service connections to produce a forecast of total customer demand.

2.4.1 Demand Projection Methodology

The water demand projections were the outcome of the District's Water Demand Forecast for District's service area for 2015 to 2035. Baseline average demand by customer class was expressed as hundred cubic feet per dwelling unit (CCF/DU) for residential use and CCF/meter for commercial and greenbelt uses. The projection of service area population was developed by applying estimates of average household density for single family and multi-family residences to the corresponding dwelling unit projections. The estimates of average household density (person/DU) were developed using data from the 2000 Census for each of the 32 Census Tracts that overlap with the District service area. The resulting estimates were 3.22 persons per single family household and 2.28 persons per multi-family household. The number of service connections for single family and multi-family residential with either a single or shared water meter was computed. The number of service connections for commercial facilities was developed based on a linear correlation with residential service connections. This correlation was found to be valid for the entire 20 year planning horizon. The number of dedicated landscape (greenbelts and parks) service connections was also determined to have a linear relationship with residential service connections and was estimated in a similar manner (Santa Margarita Water District Water Demand Forecast, M.Cubed, January 2016).

From the gathered data, projections for service connections and population were produced from the demand model. Baseline water demand for each customer class was generated from 2014 actual demands that were normalized for weather impacts. Normalization removes large variations in the data caused by variable rainfall and yearly climate conditions. The average demand was then multiplied by the

DUs and number of service connections to calculate total demand projections per customer class. Adjustments were made to demonstrate impacts from increased efficiency of household appliances from the California Plumbing Code, general conservation programs within the District, and future increased water and sewer rates. Additional detail on the demand projection model can be found in the District's Water Demand Forecast that was developed by M.Cubed in January 2016.

2.4.2 Agency Refinement

Demand projections were developed for the District as part of the Santa Margarita Water District Water Demand Forecast. The future demand projections were reviewed and accepted by the District to be used as the basis for the 2015 UWMP.

2.4.3 25 Year Projections

A key component of the 2015 UWMP is to provide insight into the District's future water demand outlook. The District's FY 2015 domestic water demand was 26,910 AFY, met through purchased imported water from MWDOC and non-domestic water sources. Table 2-5 is a projection of the District's water demand for the next 25 years.

Table 2-5: Demands for Potable Water - Projected (AF)

Retail: Demands for Potable Water - Projected					
Use Type	Projected Water Use *Report To the Extent that Records are Available*				
	2020	2025	2030	2035	2040
Single Family	15,596	15,710	15,358	14,595	14,595
Multi-Family	2,547	2,566	2,509	2,384	2,384
Commercial	992	999	977	928	928
Landscape	5,540	5,581	5,456	5,185	5,185
Other	620	625	611	581	581
Losses	1,092	1,100	1,076	1,022	1,022
TOTAL	26,388	26,581	25,986	24,695	24,695
NOTES: SMWD Demand Forecast, M.Cubed, January 2016. Losses are calculated as 4 percent of imported water volume. Data for 2040 extrapolated.					

The above demand values were developed for the District from historical data and a developed model (Santa Margarita Water District Water Demand Forecast, M.Cubed, January 2016). The District is actively decreasing its reliance on imported water by pursuing a variety of water conservation strategies and increasing recycled water use, per capita water use is developed in Section 2.5 below.

Table 2-6: Inclusion in Water Use Projections

Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections?	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc… utilized in demand projections are found.	Section 4.1
Are Lower Income Residential Demands Included In Projections?	Yes
NOTES:	

The demand data presented in this section accounts for passive and active savings in the future. Passive savings are water savings as a result of codes, standards, ordinances and public outreach on water conservation and higher efficiency fixtures. Passive savings are anticipated to continue for the next 25 years and will result in continued water saving and reduced consumption levels.

2.4.4 Total Water Demand Projections

Based on the information provided above, the total demand for potable water is listed below in Table 2-7. The District plans to expand availability and use of recycled water in its service area.

Table 2-7: Total Water Demands (AF)

Retail: Total Water Demands						
	2015	2020	2025	2030	2035	2040
Potable Water	26,910	26,388	26,581	25,986	24,695	24,695
Recycled Water Demand	7,495	10,885	11,411	11,830	11,665	11,515
TOTAL WATER DEMAND	34,405	37,273	37,992	37,816	36,360	36,210
NOTES: 2015 volumes are pulled from SMWD billing database. Forecast provided from SMWD Demand Forecast, M. Cubed, January 2016.						

2.4.5 Water Use for Affordable Housing

Since 2010, the UWMP Act has required retail water suppliers to include water use projections for single-family and multi-family residential housing for affordable households. This will assist the District in complying with the requirement under Government Code Section 65589.7 granting priority for providing water service to affordable households. An affordable household is defined as a household earning below 80 percent of the median household income (MHI). The MHI is based on the mean income of the County with a 110 percent social equity adjustment applied.

DWR recommends retail suppliers rely on the housing elements of City or County general plans to quantify planned affordable housing with the district's service area (DWR, 2015 UWMP Guidebook, February 2016). The Regional Housing Needs Assessment (RHNA) assists jurisdictions in updating general plan's housing elements section. The RHNA identifies housing needs and assesses households by income level for the district through 2010 decennial Census and 2005-2009 American Community

Survey data. The fifth cycle of the RHNA covers the planning period of October 2013 to October 2021. The Southern California Association of Governments (SCAG) adopted the RHNA Allocation Plan for this cycle on October 4, 2012 requiring housing elements updates by October 15, 2013. The California Department of Housing and Community Development reviewed the housing elements data submitted by jurisdictions in the SCAG region and concluded the data meets statutory requirements for the assessment of current housing needs.

The projected water demand for affordable households in the District's service area was estimated by calculating the percentage of projected affordable households in the service area as a percentage of the total projected units in the RHNA. The plan breaks down affordable housing into three categories: extremely low (less than 30 percent MHI), very low (31 percent - 50 percent MHI), and lower income (51 percent - 80 percent MHI). Given that the District's service area covers portions of the Cities of Mission Viejo, Rancho Santa Margarita, and San Clemente, a weighted average of the RHNA percentage of affordable households for each City within the District was calculated. The weighted average is based on the percentage of developed land in the District each City accounts for, excluding areas like the Starr Ranch Audubon Sanctuary and Prima Deshecha Landfill. Unincorporated areas within the District are also included as part of the service area.

As summarized in Table 2-8, 46.36 percent of the District's residential service area lies within Rancho Santa Margarita. Based on the housing elements of the RHNA, the projected housing need for low-income households is 25.58 percent of total housing needs. Therefore, the area weighted projected demands for low-income households for the City of Rancho Santa Margarita is 11.86 percent (46.36 percent times 25.58 percent). The same procedure is repeated for all Cities within the District's service area, which results in an overall projected housing need for low-income households of 27.29 percent as a percentage of total housing units (SCAG, RHNA Allocation Plan, November 2013).

Table 2-8: Household Distribution Based on Median Household Income

City	% Area Served	% Low-income Households by City (RHNA)	Weighted % Low-income Households
Mission Viejo	28.40%	29.55%	8.39%
Rancho Santa Margarita	46.36%	25.58%	11.86%
San Clemente	5.24%	36.65%	1.92%
Unincorporated	20.00%	25.58%	5.11%
Total	100%	**Weighted Average**	**27.29%**

Table 2-9 provides a breakdown of the projected water needs for single family and multifamily affordable households. The projected water demands shown here represent 27.29 percent of the projected water demand for the single-family and multifamily categories provided in Table 2-5 above. For example, the total single family affordable household residential demand is projected to be 4,256 AFY in 2020 and 3,983 AFY in 2040.

Table 2-9: Projected Water Demands for Housing Needed for Affordable Households (AF)

Affordable Household Water Use					
Water Use Sector	Fiscal Year Ending				
	2020	2025	2030	2035	2040
Total Residential Demand	18,144	18,276	17,866	16,979	16,979
SF Residential Demand-Affordable Households	4,256	4,287	4,191	3,983	3,983
MF Residential Demand-Affordable Households	695	700	685	651	651
Total Affordable Households Demand	***4,951***	***4,988***	***4,876***	***4,634***	***4,634***

Figure 2-1 shows a breakdown of IDs within the District's service area. ID1 consists of the City of Mission Viejo, while the City of Rancho Santa Margarita includes IDs 3, 4A, and a portion of 4C. ID7 along with small uninhabited portions of ID6 and Prima D consists of the City of San Clemente. Unincorporated areas are spread throughout the service area of the District.

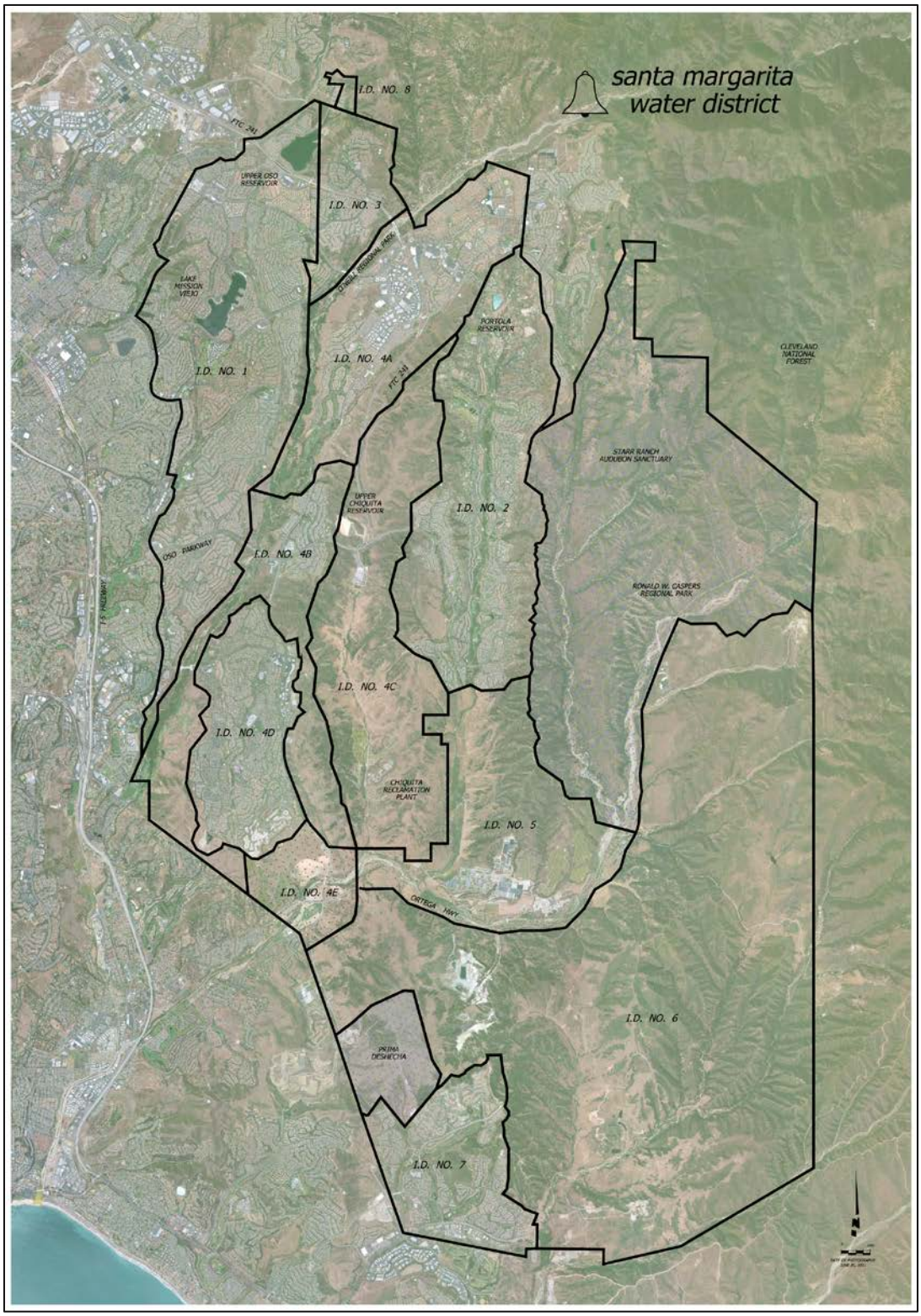


Figure 2-1: Santa Margarita Water District ID Boundaries

2.5 SBx7-7 Requirements

The Water Conservation Act of 2009, SBx7-7, signed into law on February 3, 2010, requires the State of California to reduce urban water use by 20 percent by the year 2020. The District must determine baseline water use during their baseline period and water use targets for the years 2015 and 2020 to meet the state's water reduction goal. The District may choose to comply with SBx7-7 individually or as a region in collaboration with other retail water suppliers in Orange County. Under the regional compliance option, the District is still required to report its individual water use targets. The District is required to be in compliance with SBx7-7 either individually or as part of the alliance, or demonstrate they have a plan or have secured funding to be in compliance, in order to be eligible for water related state grants and loans on or after July 16, 2016.

For the 2015 UWMP, the District must demonstrate compliance with its 2015 water use target to indicate whether or not they are on track to meeting the 2020 water use target. The District also revised their baseline per capita water use calculations using 2010 U.S. Census data. Changes in the baseline calculations also result in updated per capita water use targets.

DWR also requires agencies to submit SBx7-7 Verification Forms, a set of standardized tables to demonstrate compliance with the Water Conservation Act in this 2015 UWMP.

2.5.1 Baseline Water Use

The baseline water use is the District's gross water use divided by its service area population, reported in gallons per capita per day (GPCD). Gross water use is a measure of water that enters the distribution system of the supplier over a 12-month period with certain allowable exclusions. These exclusions are:

- Recycled water delivered within the service area
- Indirect recycled water
- Water placed in long term storage
- Water conveyed to another urban supplier
- Water delivered for agricultural use
- Process water

Water suppliers must report baseline water use for two baseline periods, the 10- to 15-year baseline (baseline GPCD) and the five-year baseline (target confirmation) as described below.

2.5.1.1 Ten to 15-Year Baseline Period (Baseline GPCD)

The first step to calculating the District's water use targets is to determine its base daily per capita water use (baseline water use). This baseline water use is essentially the District's gross water use divided by its service area population, reported in GPCD, which is calculated in the District's SBx7-7 verification form. The baseline water use is calculated as a continuous (rolling) 10-year average during a period, which ends no earlier than December 31, 2004 and no later than December 31, 2010. Water suppliers whose recycled water made up 10 percent or more of their 2008 retail water delivery can use up to a 15-

year average for the calculation. Recycled water use was 11 percent of the District's retail delivery in 2008; therefore, a 15-year baseline period is used.

The District's baseline water use is 210 GPCD, obtained from the 10-year period July 1, 1990 to June 30, 2005.

2.5.1.2 Five-Year Baseline Period (Target Confirmation)

Water suppliers are required to calculate water use, in GPCD, for a five-year baseline period. This number is used to confirm that the selected 2020 target meets the minimum water use reduction requirements. Regardless of the compliance option adopted by the District, it will need to meet a minimum water use target of 5 percent reduction from the five-year baseline water use. This five-year baseline water use is calculated as a continuous five-year average during a period, which ends no earlier than December 31, 2007 and no later than December 31, 2010. The District's five-year baseline water use is 202 GPCD, obtained from the five-year period July 1, 2003 to June 30, 2008.

2.5.1.3 Service Area Population

The District's service area boundaries correspond with the boundaries for a city or census designated place. This allows the District to use service area population estimates prepared by the Department of Finance (DOF). CDR is the entity which compiles population data for Orange County based on DOF data. The calculation of the District's baseline water use and water use targets in the 2010 UWMP was based on the 2000 U.S. Census population numbers obtained from CDR. The baseline water use and water use targets in this 2015 UWMP have been revised based on the 2010 U.S. Census population obtained from CDR in 2012.

2.5.2 SBx7-7 Water Use Targets

In the 2015 UWMP, the District may update its 2020 water use target by selecting a different target method than what was used in 2010. The target methods and determination of the 2015 and 2020 targets are described below.

2.5.2.1 SBx7-7 Target Methods

DWR has established four target calculation methods for urban retail water suppliers to choose from. The District is required to adopt one of the four options to comply with SBx7-7 requirements. The four options include:

- *Option 1* requires a simple 20 percent reduction from the baseline by 2020 and 10 percent by 2015.
- *Option 2* employs a budget-based approach by requiring an agency to achieve a performance standard based on three metrics
    - Residential indoor water use of 55 GPCD
    - Landscape water use commensurate with the Model Landscape Ordinance
    - 10 percent reduction in baseline commercial/industrial/institutional (CII) water use

- *Option 3* is to achieve 95 percent of the applicable state hydrologic region target as set forth in the State's 20x2020 Water Conservation Plan.
- *Option 4* requires the subtraction of Total Savings from the baseline GPCD:
    - Total savings includes indoor residential savings, meter savings, CII savings, and landscape and water loss savings.

The District selected to comply with Option 1 consistent with the option selected in 2010.

2.5.2.2 2015 and 2020 Targets

Under Compliance Option 1, the simple 20 percent reduction from the baseline, the District's 2015 target is 189 GPCD and the 2020 target is 169 GPCD as summarized in Table 2-10. The 2015 target is the midway value between the 10-year baseline and the confirmed 2020 target. In addition, the confirmed 2020 target needs to meet a minimum of 5 percent reduction from the five-year baseline water use. There were no adjustments made per Water Code 10608.24 and UWMP Guideline Section 5.8.2.

Table 2-10: Baselines and Targets Summary

Baselines and Targets Summary *Retail Agency*					
Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	*1991*	*2005*	*210*	*189*	*169*
5 Year	*2004*	*2008*	*202*		
*All values are in Gallons per Capita per Day (GPCD)					
NOTES:					

Table 2-11 compares the District's 2015 domestic water use target to its actual 2015 consumption. Based on this comparison, the District is in compliance with its 2015 interim target and is on track to meeting the 2020 water use target.

Table 2-11: 2015 Compliance

2015 Compliance *Retail Agency*		
Actual 2015 GPCD	2015 Interim Target GPCD	Did Supplier Achieve Targeted Reduction for 2015? Y/N
152	189	Yes
**All values are in Gallons per Capita per Day (GPCD)*		
NOTES:		

2.5.3 Regional Alliance

A retail supplier may choose to meet the SBx7-7 targets on its own or it may form a regional alliance with other retail suppliers to meet the water use target as a region. Within a Regional Alliance, each retail water supplier will have an additional opportunity to achieve compliance under both an individual target and a regional target.

- If the Regional Alliance meets its water use target on a regional basis, all agencies in the alliance are deemed compliant.
- If the Regional Alliance fails to meet its water use target, each individual supplier will have an opportunity to meet their water use targets individually.

The District is a member of the Orange County 20x2020 Regional Alliance formed by MWDOC, its wholesaler. This regional alliance consists of 29 retail agencies in Orange County as described in MWDOC's 2015 UWMP. MWDOC provides assistance in the calculation of each retail agency's baseline water use and water use targets.

In 2015, the regional baseline and targets were revised to account for any revisions made by the retail agencies to their individual 2015 and 2020 targets. The regional water use target is the weighted average of the individual retail agencies' targets (by population). The Orange County 20x2020 Regional Alliance weighted 2015 target is 176 GPCD and 2020 target is 158 GPCD. The actual 2015 water use in the region is 125 GPCD, i.e. the region has already met its 2020 GPCD goal.

3 WATER SOURCES AND SUPPLY RELIABILITY

3.1 Overview

The District relies on a combination of imported water, urban runoff, purchased groundwater, and recycled water to meet its water needs. The District works together with two primary agencies, Metropolitan and MWDOC, to ensure a safe and reliable drinking water supply that will continue to serve the community in periods of drought and shortage. The sources of imported water supplies include water from the CRA and the SWP provided by Metropolitan and delivered through MWDOC.

The District's main source of water supply is imported water purchased from Metropolitan via MWDOC. In calendar year (CY) 2015, the District total water supply was approximately 78 percent imported water and 22 percent recycled water. No groundwater was used by the District in 2015. The District seeks to minimize its imported water usage by developing alternative domestic water supplies such as groundwater improvements and alternative water sources. By 2040, the District's water supply portfolio is projected to consist of 41 percent Metropolitan treated water, 13 percent alternative sourced water, 13 percent local groundwater, and 29 percent recycled water for irrigation, which is shown on Figure 3-1. The District is also seeking 2,000 AFY of water transfers as an emergency supply source.

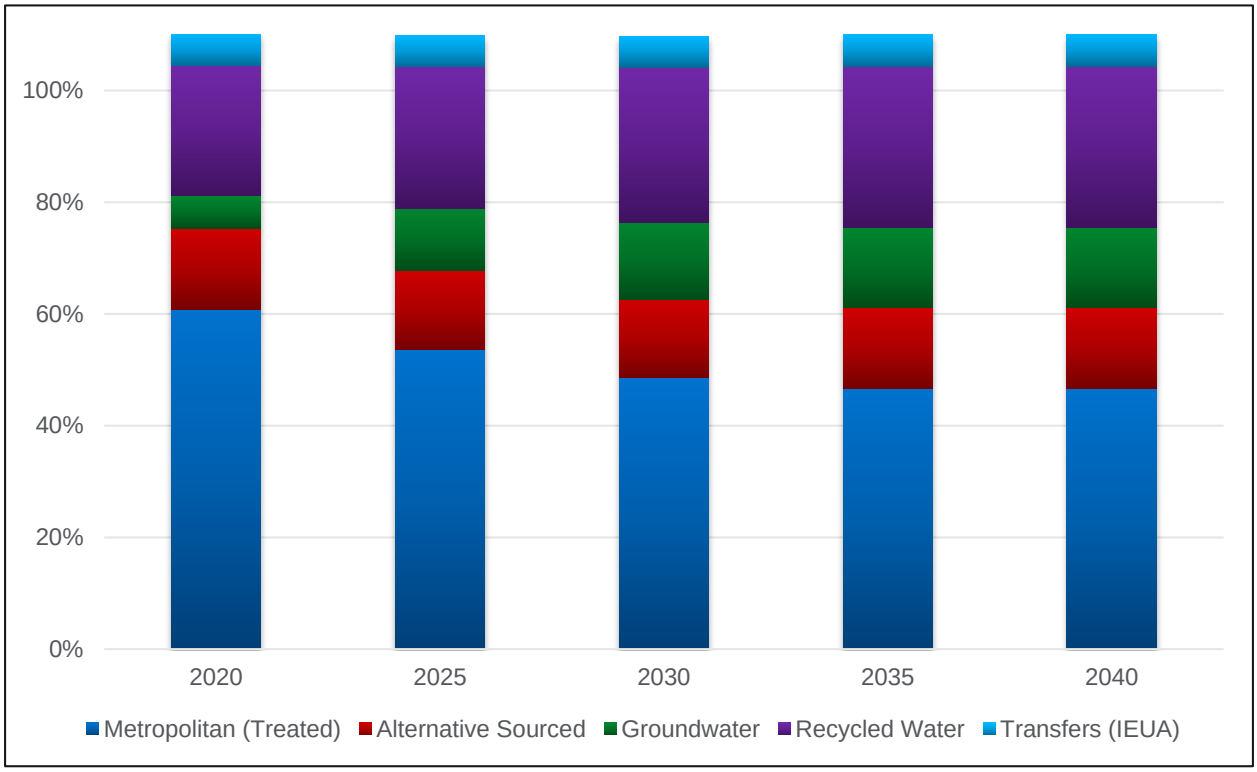


Figure 3-1: Water Supply Sources in the District

The following sections provide a detailed discussion of the District's water sources as well as projections for the District's future water supply portfolio for the next 25 years. Additionally, the District's projected

supply and demand under various hydrological conditions are compared to determine the District's supply reliability for the 25 year planning horizon.

3.2 Imported Water

The District's potable water is entirely dependent on imported water purchased from Metropolitan through MWDOC. Metropolitan's principal sources of water are the Colorado River via the CRA and the Lake Oroville watershed in Northern California through the SWP. Treatment of water taken from Metropolitan will occur at either the Diemer Filtration Plant or the Baker Treatment Plant before being delivered to the District.

The District has connections to the Allen-McColloch Pipeline (AMP) and the East Orange County Feeder No. 2 (EOCF #2) which both deliver potable water. The AMP is the District's primary source of potable water. It is connected to the South County Pipeline (SCP), which is jointly owned by the District and Metropolitan but operated by the District. The EOCF #2 is a pipeline jointly owned by several local agencies and Metropolitan. The District has capacity rights of 10,000 AFY in the EOCF #2. Water is also delivered through the Aufdenkamp Transmission Main to the District's Plaza Pump Station through CM-12. The District has 9,400 AFY capacity in the Baker Treatment Plant, operated by IRWD. This plant receives untreated water from Metropolitan through the Santiago Lateral and treats it to drinking water standards. The water from the Baker Treatment Plant is delivered to the District through the South County Pipeline. The District also import/purchases non-domestic water from IRWD, RMV, and MNWD.

3.2.1 Colorado River Supplies

The Colorado River was Metropolitan's original source of water after Metropolitan's establishment in 1928. The CRA, which is owned and operated by Metropolitan, transports water from the Colorado River to its terminus at Lake Mathews in Riverside County. The actual amount of water per year that may be conveyed through the CRA to Metropolitan's member agencies is subject to the availability of Colorado River water for delivery.

The CRA includes supplies from the implementation of the Quantification Settlement Agreement and related agreements to transfer water from agricultural agencies to urban uses. The 2003 Quantification Settlement Agreement enabled California to implement major Colorado River water conservation and transfer programs, stabilizing water supplies for 75 years and reducing the state's demand on the river to its 4.4 million acre-feet(MAF) entitlement. Water from the Colorado River or its tributaries is available to users in California, Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming, as well as to Mexico. California is apportioned the use of 4.4 MAF of water from the Colorado River each year plus one-half of any surplus that may be available for use collectively in Arizona, California, and Nevada. In addition, California has historically been allowed to use Colorado River water apportioned to but not used by Arizona or Nevada. Metropolitan has a basic entitlement of 550,000 AFY of Colorado River water, plus surplus water up to an additional 662,000 AFY when the following conditions exists (Metropolitan, 2015 Draft UWMP, March 2016):

- Water unused by the California holders of priorities 1 through 3
- Water saved by the Palo Verde land management, crop rotation, and water supply program

- When the U.S. Secretary of the Interior makes available either one or both:
    - Surplus water is available
    - Colorado River water is apportioned to but unused by Arizona and/or Nevada

Unfortunately, Metropolitan has not received surplus water for a number of years. The Colorado River supply faces current and future imbalances between water supply and demand in the Colorado River Basin due to long term drought conditions. Over the past 16 years (2000-2015), there have only been three years when the Colorado River flow has been above average (Metropolitan, 2015 UWMP, May 2016). The long-term imbalance in future supply and demand is projected to be approximately 3.2 MAF by the year 2060.

Approximately 40 million people rely on the Colorado River and its tributaries for water with 5.5 million acres of land using Colorado River water for irrigation. Climate change will also affect future supply and demand as increasing temperatures may increase evapotranspiration from vegetation along with an increase in water loss due to evaporation in reservoirs, therefore reducing the available amount of supply from the Colorado River and exacerbating imbalances between increasing demands from rapid growth and decreasing supplies.

Four water supply scenarios were developed around these uncertainties, each representing possible water supply conditions. These four scenarios are as follow:

- **Observed Resampled:** future hydrologic trends and variability are similar to the past approximately 100 years.
- **Paleo Resampled:** future hydrologic trends and variability are represented by reconstructions of streamflow for a much longer period in the past (approximately 1,250 years) that show expanded variability.
- **Paleo Conditioned:** future hydrologic trends and variability are represented by a blend of the wet-dry states of the longer paleo-reconstructed period.
- **Downscaled General Circulation Model (GCM) Projected:** future climate will continue to warm, with regional precipitation and temperature trends represented through an ensemble of future downscaled GCM projections.

The Colorado River Basin Water Supply and Demand Study (Study) assessed the historical water supply in the Basin through two historical streamflow data sets, from the year 1906 through 2007 and the paleo-reconstructed record from 762 through 2005. The following are findings from the study:

- Increased temperatures in both the Upper and Lower Colorado River Basins since the 1970s has been observed.
- Loss of springtime snowpack was observed with consistent results across the lower elevation northern latitudes of the western United States. The large loss of snow at lower elevations strongly suggest the cause is due to shifts in temperature.
- The deficit between the two year running average flow and the long-term mean annual flow that started in the year 2000 is more severe than any other deficit in the observed period, at nine years and 28 MAF deficit.

- There are deficits of greater severity from the longer paleo record compared to the period from 1906 through 2005. One deficit amounted to 35 MAF through a span of 16 years.

A summary of the trends from the observed period suggest declining stream flows, increases in variability, and seasonal shifts in streamflow that may be related to shifts in temperature.

Findings concerning the future projected supply were obtained from the Downscaled GCM Projected scenario as the other methods did not consider the impacts of a changing climate beyond what has occurred historically. These findings include:

- Increased temperatures are projected across the Basin with larger changes in the Upper Basin than in the Lower Basin. Annual Basin-wide average temperature is projected to increase by 1.3 degrees Celsius over the period through 2040.
- Projected seasonal trends toward drying are significant in certain regions. A general trend towards drying is present in the Basin, although increases in precipitation are projected for some higher elevation and hydrologically productive regions. Consistent and expansive drying conditions are projected for the spring and summer months throughout the Basin, although some areas in the Lower Basin are projected to experience slight increases in precipitation, which is thought to be attributed to monsoonal influence in the region. Upper Basin precipitation is projected to increase in the fall and winter, and Lower Basin precipitation is projected to decrease.
- Snowpack is projected to decrease due to precipitation falling as rain rather than snow and warmer temperatures melting the snowpack earlier. Areas where precipitation does not change or increase is projected to have decreased snowpack in the fall and early winter. Substantial decreases in spring snowpack are projected to be widespread due to earlier melt or sublimation of snowpack.
- Runoff (both direct and base flow) is spatially diverse, but is generally projected to decrease, except in the northern Rockies. Runoff is projected to increase significantly in the higher elevation Upper Basin during winter but is projected to decrease during spring and summer.

The following future actions must be taken to implement solutions and help resolve the imbalance between water supply and demand in areas that use Colorado River water (U.S. Department of the Interior Bureau of Reclamation, Colorado River Basin Water Supply and Demand Study, December 2012):

- Resolution of significant uncertainties related to water conservation, reuse, water banking, and weather modification concepts.
- Costs, permitting issues, and energy availability issues relating to large-capacity augmentation projects need to be identified and investigated.
- Opportunities to advance and improve the resolution of future climate projections should be pursued.
- Consideration should be given to projects, policies, and programs that provide a wide-range of benefits to water users and healthy rivers for all users.

3.2.2 State Water Project Supplies

The SWP consists of a series of pump stations, reservoirs, aqueducts, tunnels, and power plants operated by DWR and is an integral part of the effort to ensure that business and industry, urban and suburban residents, and farmers throughout much of California have sufficient water. The SWP is the largest state-built, multipurpose, user-financed water project in the United States. Nearly two-thirds of residents in California receive at least part of their water from the SWP with approximately 70 percent of SWP's contracted water supply going to urban users and 30 percent to agricultural users. The primary purpose of the SWP is to divert and store water during wet periods in Northern and Central California and distribute it to areas of need in Northern California, the San Francisco Bay area, the San Joaquin Valley, the Central Coast, and southern California.

The availability of water supplies from the SWP can be highly variable. A wet water year may be followed by a dry or critically dry year and fisheries issues can restrict the operations of the export pumps even when water supplies are available.

The Sacramento-San Joaquin River Delta (Delta) is key to the SWP's ability to deliver water to its agricultural and urban contractors. All but five of the 29 SWP contractors receive water deliveries below the Delta (pumped via the Harvey O. Banks or Barker Slough pumping plants). However, the Delta faces many challenges concerning its long-term sustainability such as climate change posing a threat of increased variability in floods and droughts. Sea level rise complicates efforts in managing salinity levels and preserving water quality in the Delta to ensure a suitable water supply for urban and agricultural use. Furthermore, other challenges include continued subsidence of Delta islands, many of which are below sea level, and the related threat of a catastrophic levee failure as the water pressure increases, or as a result of a major seismic event.

Ongoing regulatory restrictions, such as those imposed by federal biological opinions (Biops) on the effects of SWP and the federal Central Valley Project (CVP) operations on certain marine life, also contributes to the challenge of determining the SWP's water delivery reliability. In dry, below-normal conditions, Metropolitan has increased the supplies delivered through the California Aqueduct by developing flexible CVP/SWP storage and transfer programs. The goal of the storage/transfer programs is to develop additional dry-year supplies that can be conveyed through the available Harvey O. Banks pumping plant capacity to maximize deliveries through the California Aqueduct during dry hydrologic conditions and regulatory restrictions. In addition, the California State Water Resources Control Board (SWRCB) has set water quality objectives that must be met by the SWP including minimum Delta outflows, limits on SWP and CVP Delta exports, and maximum allowable salinity level.

Metropolitan's Board approved a Delta Action Plan in June 2007 that provides a framework for staff to pursue actions with other agencies and stakeholders to build a sustainable Delta and reduce conflicts between water supply conveyance and the environment. The Delta action plan aims to prioritize immediate short-term actions to stabilize the Delta while an ultimate solution is selected, and mid-term steps to maintain the Delta while a long-term solution is implemented. Currently, Metropolitan is working towards addressing three basin elements: Delta ecosystem restoration, water supply conveyance, and flood control protection and storage development.

"Table A" water is the maximum entitlement of SWP water for each water contracting agency. Currently, the combined maximum Table A amount is 4.17 MAFY. Of this amount, 4.13 MAFY is the maximum

Table A water available for delivery from the Delta pumps as stated in the State Water Contract. However, deliveries commonly are less than 50 percent of the Table A.

SWP contractors may receive Article 21 water on a short-term basis in addition to Table A water if requested. Article 21 of SWP contracts allows contractors to receive additional water deliveries only under specific conditions, generally during wet months of the year (December through March). Because an SWP contractor must have an immediate use for Article 21 supply or a place to store it outside of the SWP, there are few contractors like Metropolitan that can access such supplies.

Carryover water is SWP water allocated to an SWP contractor and approved for delivery to the contractor in a given year but not used by the end of the year. The unused water is stored in the SWP's share of San Luis Reservoir, when space is available, for the contractor to use in the following year.

Turnback pool water is Table A water that has been allocated to SWP contractors that has exceeded their demands. This water can then be purchased by another contractor depending on its availability.

SWP Delta exports are the water supplies that are transferred directly to SWP contractors or to San Luis Reservoir storage south of the Delta via the Harvey O. Banks pumping plant. Estimated average annual Delta exports and SWP Table A water deliveries have generally decreased since 2005, when Delta export regulations affecting SWP pumping operations became more restrictive due to the Biops. A summary SWP water deliveries from the years 2005 and 2013 is summarized in Table 3-1.

Table 3-1: Metropolitan Colorado River Aqueduct Program Capabilities

Year	Average Annual Delta Exports (MAF)	Average Annual Table A Deliveries (MAF)
2005	2.96	2.82
2013	2.61	2.55
Percent Change	-11.7%	-9.4%

The following factors affect the ability to estimate existing and future water delivery reliability:

- Water availability at the source: Availability depends on the amount and timing of rain and snow that fall in any given year. Generally, during a single dry year or two, surface and groundwater storage can supply most water deliveries, but multiple dry years can result in critically low water reserves.
- Water rights with priority over the SWP: Water users with prior water rights are assigned higher priority in DWR's modeling of the SWP's water delivery reliability, even ahead of SWP Table A water.
- Climate change: mean temperatures are predicted to vary more significantly than previously expected. This change in climate is anticipated to bring warmer winter storms that result in less snowfall at lower elevations, reducing total snowpack. From historical data, DWR projects that by 2050, the Sierra snowpack will be reduced from its historical average by 25 to 40 percent. Increased precipitation as rain could result in a larger number of "rain-on-snow" events, causing snow to melt earlier in the year and over fewer days than historically, affecting the availability of water for pumping by the SWP during summer.

- Regulatory restrictions on SWP Delta exports due to the Biops to protect special-status species such as delta smelt and spring- and winter-run Chinook salmon. Restrictions on SWP operations imposed by state and federal agencies contribute substantially to the challenge of accurately determining the SWP's water delivery reliability in any given year.
- Ongoing environmental and policy planning efforts: the California WaterFix involves water delivery improvements that could reduce salinity levels by diverting a greater amount of lower salinity Sacramento water to the South Delta export pumps. The EcoRestore Program aims to restore at least 30,000 acres of Delta habitat, and plans to be well on the way to meeting that goal by the year 2020.
- Delta levee failure: The levees are vulnerable to failure because most original levees were simply built with soils dredged from nearby channels and were not engineered. A breach of one or more levees and island flooding could affect Delta water quality and SWP operations for several months. When islands are flooded, DWR may need to drastically decrease or even cease SWP Delta exports to evaluate damage caused by salinity in the Delta.

The Delta Risk Management Strategy addresses the problem of Delta levee failure and evaluates alternatives to reduce the risk to the Delta. Four scenarios were developed to represent a range of possible risk reduction strategies (Department of Water Resources, The State Water Project Final Delivery Capability Report 2015, July 2015). They are:

- ***Trial Scenario 1 Improved Levees:*** This scenario looks at improving the reliability of Delta levees against flood-induced failures by providing up to 100-year flood protection. The report found that improved levees would not reduce the risk of potential water export interruptions, nor would it change the seismic risk of most levees.
- ***Trial Scenario 2 Armored Pathway:*** This scenario looks at improving the reliability of water conveyance by creating a route through the Delta that has high reliability and the ability to minimize saltwater intrusion into the south Delta. The report found that this scenario would have the joint benefit of reducing the likelihood of levee failures from flood events and earthquakes, and of significantly reducing the likelihood of export disruptions.
- ***Trial Scenario 3 Isolated Conveyance:*** This scenario looks to provide high reliability for conveyance of export water by building an isolated conveyance facility on the east side of the Delta. The effects of this scenario are similar to those for Trial Scenario 2 but with the added consequence of seismic risk of levee failure on islands that are not part of the isolated conveyance facility.
- ***Trial Scenario 4 Dual Conveyance:*** This scenario is a combination of Scenarios 2 and 3 as it looks to improve reliability and flexibility for conveyance of export water by constructing an isolated conveyance facility and through-Delta conveyance. It would mitigate the vulnerability of water exports associated with Delta levee failure and offer flexibility in water exports from the Delta and the isolated conveyance facility. However, seismic risk would not be reduced on islands not part of the export conveyance system or infrastructure pathway.

DWR has altered the SWP operations to accommodate species of fish listed under the Biops, and these changes have adversely impacted SWP deliveries. DWR's Water Allocation Analysis indicated that export

restrictions are currently reducing deliveries to Metropolitan as much as 150 TAF to 200 TAF under median hydrologic conditions.

Operational constraints likely will continue until a long-term solution to the problems in the Bay-Delta is identified and implemented. New biological opinions for listed species under the Federal ESA or by the California Department of Fish and Game's issuance of incidental take authorizations under the Federal ESA and California ESA might further adversely affect SWP and CVP operations. Additionally, new litigation, listings of additional species or new regulatory requirements could further adversely affect SWP operations in the future by requiring additional export reductions, releases of additional water from storage or other operational changes impacting water supply operations.

3.2.3 Storage

Storage is a major component of Metropolitan's dry year resource management strategy. Metropolitan's likelihood of having adequate supply capability to meet projected demands, without implementing its Water Supply Allocation Plan (WSAP), is dependent on its storage resources.

Lake Oroville is the SWP's largest storage facility, with a capacity of about 3.5 MAF. The water is released from Oroville Dam into the Feather River as needed, which converges with the Sacramento River while some of the water at Bethany Reservoir is diverted from the California Aqueduct into the South Bay Aqueduct. The primary pumping plant, the Harvey O. Banks pumping plant, pumps Delta water into the California Aqueduct, which is the longest water conveyance system in California.

3.3 Groundwater

The District has had limited access to groundwater supply. The District plans to integrate groundwater into its future plans primarily through the use of the San Juan Basin.

3.3.1 San Juan Basin Characteristics

The Basin is located in the San Juan Creek Watershed and is comprised of four principal groundwater basins: 1) Lower Basin, 2) Middle Basin, 3) Upper Basin, and 4) Arroyo Trabuco. A map of the four principal groundwater basins is shown on Figure 3-2. The four principal basins consist of approximately 5.9 square miles of water bearing alluvium. Groundwater occurs in the relatively thin alluvial deposits along the valley floors and within the major stream channels. The younger alluvial deposits within the Basin consists of a heterogeneous mixture of sand, silts, and gravel.

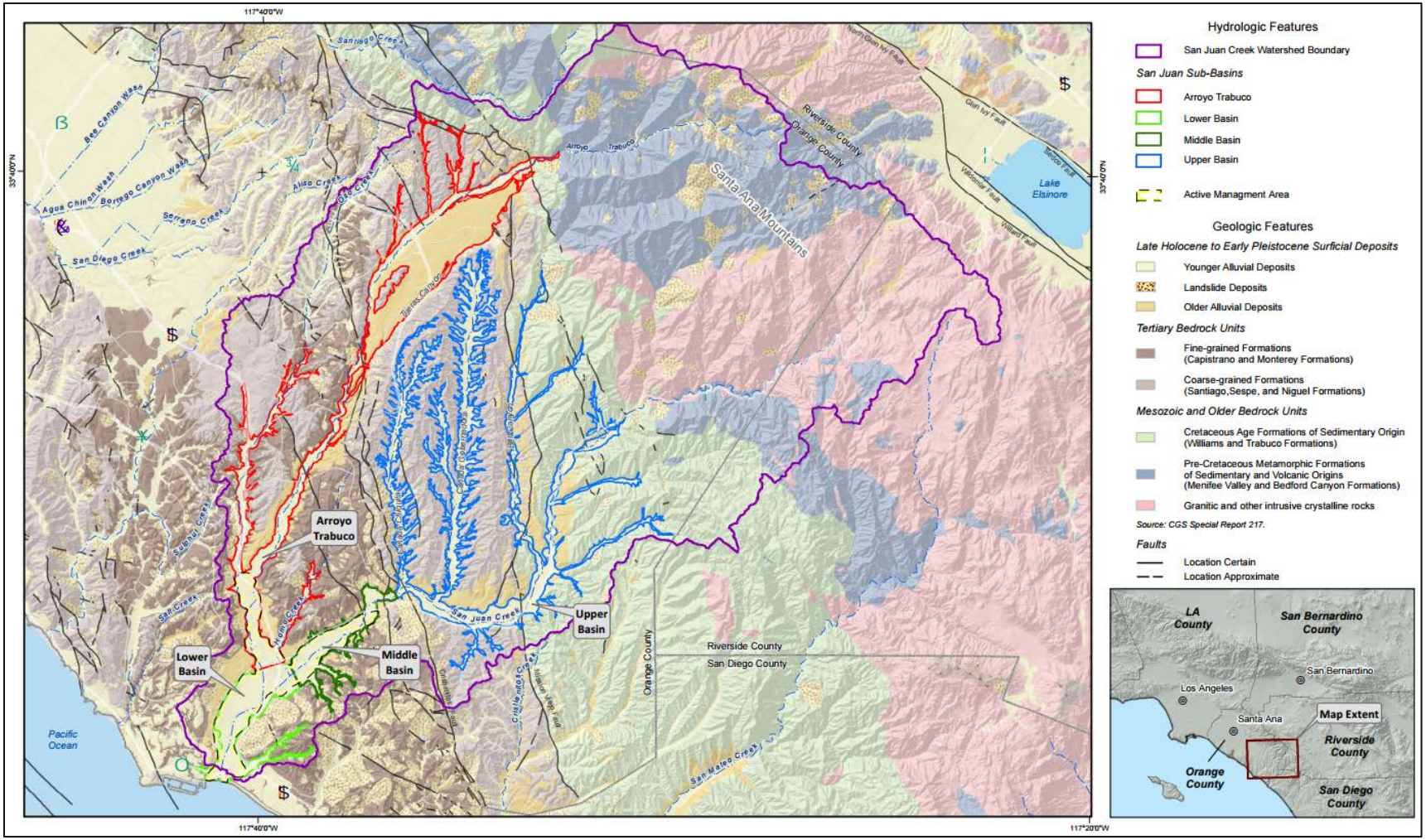


Figure 3-2: Principal Groundwater Basins for the San Juan Groundwater Basin

The physical boundaries of the Basin include the Santa Ana Mountain to the north, sedimentary rock formations to the sides of the Upper Basin and Arroyo Trabuco, and the Pacific Ocean to the south.

The Basin is recharged through a variety of sources such as:

- Streambed infiltration in San Juan Creek, Horno Creek, Oso Creek, and Arroyo Trabuco.
- Subsurface inflows along boundaries at the head of the tributaries upstream and other minor subsurface inflows from other boundaries.
- Precipitation and applied water.
- Flow from fractures and springs.

Discharge of groundwater from the Basin occurs from a variety of sources such as:

- Groundwater production
- Rising groundwater
- Evapotranspiration
- Outflow to Pacific Ocean

Currently, five agencies, including the District, have adjudicated groundwater rights to the Basin and uses this water for either municipal purposes or for irrigation. The agencies with groundwater rights to the Basin and their current rights are listed below:

- South Coast Water District: 1,300 AFY
- San Juan Basin Authority: 8,026 AFY
- Santa Margarita Water District: 643 AFY
- San Juan Hills Golf Course: 450 AFY
- City of San Juan Capistrano: 3,325 AFY

The Basin is not adjudicated and differs from adjudicated groundwater basins as it does not strictly follow the term “safe yield” in preventing undesirable results occurring as a result of over-production of groundwater. The Basin is governed by San Juan Basin Authority (SJBA) and is a Joint Power Agency comprised of representatives from four local jurisdictions, the District, MNWD, the City of San Juan Capistrano, and South Coast Water District (SCWD). The SJBA has recently adopted the concept of “adaptive management” of the San Juan Groundwater Basin to vary pumping from year to year based on actual basin conditions derived from monitoring efforts. This is due in part to the SWRCB characterization of the San Juan Groundwater Basin as a “flowing underground stream” and because the storage in the groundwater basin is small relative to recharge and production. The range of natural yield of the San Juan Groundwater Basin is 7,000 AFY to 11,000 AFY. Preliminary design work is underway to construct rubber dams within portions of San Juan Creek to increase the recharge of urban runoff and/or stormwater flows. This is anticipated to increase the yield from 1,000 – 2,000 AFY. Additional future efforts are anticipated that will use recycled water to recharge the basin which may increase the yield an additional 4,000 – 7,000 AFY (San Juan Basin Authority, Draft Foundational Action Program Report, March 2016). A more detailed description of the Basin’s characteristics can be found in Appendix C.

3.3.2 Groundwater Historical Extraction

Historically, the District has not pumped any groundwater from the San Juan Basin to be used within its service area but is projected to begin pumping by 2020.

3.3.3 Transfers and Exchanges

The District currently has transfer and exchange opportunities with CVWD, GSWC, and potentially Inland Empire Utilities Agency (IEUA). Detailed information on these opportunities can be found in Section 7.2.

3.4 Summary of Existing and Planned Sources of Water

The actual sources and volume of water for the year 2015 is displayed in Table 3-2.

Table 3-2: Water Supplies, Actual (AF)

Retail: Water Supplies — Actual			
Water Supply	Additional Detail on Water Supply	2015	
		Actual Volume	Water Quality
Groundwater	San Juan Groundwater Basin	0	Drinking Water
Purchased or Imported Water	MWDOC/MET	26,910	Drinking Water
Recycled Water		7,495	Recycled Water
	Total	34,405	
NOTES: Santa Margarita Water District Demand Forecast Updated Workbook, M.Cubed, January 2016.			

A summary of the current and planned sources of water for the District is shown in Table 3-3.

Table 3-3: Water Supplies, Projected (AF)

Retail: Water Supplies — Projected						
Water Supply	Additional Detail on Water Supply	Projected Water Supply *Report To the Extent Practicable*				
		2020	**2025**	**2030**	**2035**	**2040**
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Purchased or Imported Water	MWDOC/MET	11,500	9,700	8,100	6,800	6,800
Purchased or Imported Water	Baker	9,400	9,400	9,400	9,400	9,400
Other	Alternative Sources	5,000	5,000	5,000	5,000	5,000
Transfers	Emergency Source	2,000	2,000	2,000	2,000	2,000
Groundwater	San Juan Basin/IPR	2,000	4,000	5,000	5,000	5,000
Recycled Water	Irrigation purposes	10,885	11,411	11,830	11,665	11,515
	Total	40,785	41,511	41,330	39,865	39,715
NOTES: SMWD Demand Forecast, M.Cubed, January 2016.						

3.5 Recycled Water

One of the major components of the District's water conservation program is its recycled water program. The District provides additional treatment to a portion of its secondary treated wastewater. The recycled water is then used for landscape irrigation services. Demands for recycled water continue to increase as new and existing potable water irrigation services are continually being connected to the recycled water system. The District's recycled water program is more fully described in Section 6.

3.6 Supply Reliability

3.6.1 Overview

Every urban water supplier is required to assess the reliability of their water service to its customers under normal, dry, and multiple dry water years. The District depends on a combination of imported and local supplies to meet its water demands and has taken numerous steps to ensure it has adequate supplies. Development of various local water augmentation projects will increase the reliability of the imported water system. There are various factors that may impact reliability of supplies such as legal, environmental, water quality and climatic which are discussed below. The water supplies are projected to meet full-service demands; Metropolitan's 2015 UWMP finds that Metropolitan is able to meet, full-service demands of its member agencies starting 2020 through 2040 during normal years, single dry year, and multiple dry years.

Metropolitan's 2015 Integrated Water Resource Plan (IRP) update describes the core water resources that will be used to meet full-service demands at the retail level under all foreseeable hydrologic conditions from 2020 through 2040. The foundation of Metropolitan's resource strategy for achieving regional water supply reliability has been to develop and implement water resources programs and activities through its IRP preferred resource mix. This preferred resource mix includes conservation, local resources such as water recycling and groundwater recovery, Colorado River supplies and transfers, SWP supplies and transfers, in-region surface reservoir storage, in-region groundwater storage, out-of-region banking, treatment, conveyance and infrastructure improvements.

In the event of a local source not available at a consistent level of use, it will be supplemented with imported water from Metropolitan through MWDOC.

3.6.2 Factors Impacting Reliability

The following are some of the factors identified by Metropolitan that may have an impact on the reliability of Metropolitan supplies.

3.6.2.1 Environment

Endangered species protection needs in the Delta have resulted in operational constraints to the SWP system, as mentioned previously in the State Water Project Supplies section.

3.6.2.2 Legal

The addition of more species under the Endangered Species Act and new regulatory requirements could impact SWP operations by requiring additional export reductions, releases of additional water from storage or other operational changes impacting water supply operations.

3.6.2.3 Water Quality

3.6.2.3.1 Imported Water

Metropolitan is responsible for providing high quality potable water throughout its service area. Over 300,000 water quality tests are performed per year on Metropolitan's water to test for regulated contaminants and additional contaminants of concern to ensure the safety of its waters. Metropolitan's supplies originate primarily from the CRA and from the SWP. A blend of these two sources, proportional to each year's availability of the source, is then delivered throughout Metropolitan's service area.

Metropolitan's primary water sources face individual water quality issues of concern. The CRA water source contains higher total dissolved solids (TDS) and the SWP contains higher levels of organic matter, lending to the formation of disinfection byproducts. To remediate the CRA's high level of salinity and the SWP's high level of organic matter, Metropolitan blends CRA and SWP supplies and has upgraded all of its treatment facilities to include ozone treatment processes. In addition, Metropolitan has been engaged in efforts to protect its Colorado River supplies from threats of uranium, perchlorate, and chromium VI while also investigating the potential water quality impact of emerging contaminants, N-nitrosodimethylamine (NDMA), and pharmaceuticals and personal care products (PPCP). While unforeseeable water quality issues could alter reliability, Metropolitan's current strategies ensure the deliverability of high quality water.

The presence of Quagga Mussels in water sources is a water quality concern. Quagga Mussels are an invasive species that was first discovered in 2007 at Lake Mead, on the Colorado River. This species of mussels form massive colonies in short periods of time, disrupting ecosystems and blocking water intakes. They are capable of causing significant disruption and damage to water distribution systems. Controlling the spread and impacts of this invasive species within the CRA requires extensive maintenance and results in reduced operational flexibility. It also resulted in Metropolitan eliminating deliveries of CRA water into Diamond Valley Lake to keep the reservoir free from Quagga Mussels.

3.6.2.3.2 Groundwater

Groundwater quality from the San Juan Basin was determined through the analyses of available data from production and monitoring wells. Constituents of concern within the San Juan Basin include TDS, nitrate nitrogen, manganese, and iron.

TDS consists of inorganic salts dissolved in water, with the major ions being sodium, potassium, calcium, magnesium, bicarbonates, chlorides, and sulfates under Title 22. The California secondary MCL for TDS is 500 mg/L. Four wells were tested for TDS and all of the wells exceeded the secondary MCL for TDS. The lower portion of the San Juan Basin exhibits relatively higher TDS levels due to irrigation return flows, fertilizer use, consumptive use, and dissolution of ions from weathered rock surfaces and salts.

Nitrate within groundwater can be both naturally-occurring and can also be associated with agriculture and other synthetic production. The primary MCL for nitrate in drinking water is 10 mg/L. Most groundwater wells monitored for nitrate exhibited levels below MCL except for two wells.

Manganese is a naturally-occurring inorganic constituent dissolved in water. Manganese is an essential micronutrient at low concentrations, but at higher concentrations in drinking water, manganese may lead to objectionable aesthetic qualities such as bitter taste and staining of clothes. The California secondary MCL for manganese is 0.5 mg/L. Most wells monitored for manganese exceeded the secondary MCL for manganese by as much as 40 times with the exception of two wells in the Oso and Lower Trabuco area.

Iron is a naturally-occurring inorganic constituent dissolved in water. Similar to manganese, iron in low concentrations is an essential micronutrient, but iron in higher concentrations in drinking water leads to the same objectionable aesthetic qualities as those of manganese. The California secondary drinking water MCL for iron is 0.3 mg/L. With the exception of one groundwater well in the Oso area, all wells exceeded the secondary MCL for iron by as much as 60 times (San Juan Basin Authority, San Juan Basin Groundwater and Facilities Management Plan, November 2013).

3.6.2.4 Climate Change

Changing climate patterns are expected to shift precipitation patterns and affect water supply. Unpredictable weather patterns will make water supply planning more challenging. The areas of concern for California include a reduction in Sierra Nevada Mountain snowpack, increased intensity and frequency of extreme weather events, and rising sea levels causing increased risk of Delta levee failure, seawater intrusion of coastal groundwater basins, and potential cutbacks on the SWP and CVP. The major impact in California is that without additional surface storage, the earlier and heavier runoff (rather than snowpack retaining water in storage in the mountains), will result in more water being lost to the oceans. A heavy emphases on storage is needed in the State of California.

In addition, the Colorado River Basin supplies have been inconsistent since about the year 2000, resulting in 13 of the last 16 years of the upper basin runoff being below normal. Climate models are predicting a continuation of this pattern whereby hotter and drier weather conditions will result in continuing lower runoff.

Legal, environmental, and water quality issues may have impacts on Metropolitan supplies. It is felt, however, that climatic factors would have more of an impact than legal, water quality, and environmental factors. Climatic conditions have been projected based on historical patterns but severe pattern changes are still a possibility in the future.

3.6.3 Normal-Year Reliability Comparison

The District has entitlements to receive imported water from Metropolitan through MWDOC via connection to Metropolitan's regional distribution system. Although pipeline and connection capacity rights do not guarantee the availability of water, per se, they do guarantee the ability to convey water when it is available to the Metropolitan distribution system. All imported water supplies are assumed available to the District from existing water transmission facilities. The demand and supplies listed below also include recycled water supplies that are available to the District.

For the 2015 UWMP, the normal year was selected as a range between 1995 through 2015. Due to ongoing drought conditions within California and the increased implementation of mitigation measures, this range was determined to represent an average water demand for this UWMP.

3.6.4 Single-Dry Year Reliability Comparison

A Single-dry year is defined as a single year of no to minimal rainfall within a period that average precipitation is expected to occur. The District has documented that it is 100 percent reliable for single dry year demands from 2020 through 2040 with a demand increase of 4 percent using FY 2001-02 as the single dry-year. This percentage was determined for the District by as part of the Santa Margarita Water District Water Demand Forecast based on historical demand from the service area and rainfall data, 2002 has the lowest amount of precipitation in the last 30 years (SMWD Water Demand Forecast, M.Cubed, January 2016).

3.6.5 Multiple-Dry Year Period Reliability Comparison

Multiple-dry years are defined as three or more years with minimal rainfall within a period of average precipitation. The District is capable of meeting all customers' demands with significant reserves held by Metropolitan, local recycled water supplies, and conservation in multiple dry years from 2020 through 2040. Demand increases of two percent for the first year, four percent for the second year and nine percent for the third year represent 2012-2014 as the three driest years in succession (SMWD Water Demand Forecast, M.Cubed, January 2016). These percentages were chosen to show the cumulative impact of low precipitation on demand. The basis of the water year is displayed in Table 3-4.

Table 3-4: Basis of Water Year Data

Retail: Basis of Water Year Data			
Year Type	Base Year	Available Supplies if Year Type Repeats	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available	% of Average Supply
Average Year	1995-2015		100%
Single-Dry Year	2002		104%
Multiple-Dry Years 1st Year	2012		102%
Multiple-Dry Years 2nd Year	2013		104%
Multiple-Dry Years 3rd Year	2014		109%
NOTES:			

3.7 Supply and Demand Assessment

A comparison between the supply and demand for projected years between 2020 and 2040 is shown in Table 3-5. As stated above, the available supply will meet projected demand due to diversified supply and conservation measures.

Table 3-5: Normal Year Supply and Demand Comparison (AF)

Retail: Normal Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040
Supply totals	40,785	41,511	41,330	39,865	39,715
Demand totals	37,273	37,992	37,816	36,360	36,210
Difference	3,512	3,519	3,514	3,505	3,505
NOTES: SMWD Forecast, M.Cubed, January 2016.					

A comparison between the supply and the demand in a single dry year is shown in Table 3-6. As stated above, the available supply will meet projected demand due to diversified supply and conservation measures.

Table 3-6: Single Dry Year Supply and Demand Comparison (AF)

Retail: Single Dry Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040
Supply totals	40,785	41,511	41,330	39,865	39,715
Demand totals	38,764	39,512	39,329	37,814	37,658
Difference	2,021	1,999	2,001	2,051	2,057
NOTES: SMWD Demand Forecast, M.Cubed, January 2016.					

A comparison between the supply and the demand in multiple dry years is shown in Table 3-7.

Table 3-7: Multiple Dry Years Supply and Demand Comparison (AF)

Retail: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	2040
First year	Supply totals	40,785	41,511	41,330	39,865	39,715
	Demand totals	38,018	38,752	38,572	37,087	36,934
	Difference	2,767	2,759	2,758	2,778	2,781
Second year	Supply totals	40,785	41,511	41,330	39,865	39,715
	Demand totals	38,764	39,512	39,329	37,814	37,658
	Difference	2,021	1,999	2,001	2,051	2,057
Third year	Supply totals	40,785	41,511	41,330	39,865	39,715
	Demand totals	40,628	41,411	41,219	39,632	39,469
	Difference	157	100	111	233	246
NOTES: SMWD Demand Forecast, M.Cubed, January 2016.						

4 DEMAND MANAGEMENT MEASURES

The goal of the Demand Management Measures (DMM) section is to provide a comprehensive description of the water conservation programs that a supplier has implemented, is currently implementing, and plans to implement in order to meet its urban water use reduction targets. The reporting requirements for DMM has been significantly modified and streamlined in 2014 by AB-2067. For a retail agency such as the District the reporting requirements changed from having 14 specific measures to six more general requirements plus an “other” category.

4.1 Water Waste Prevention Ordinances

Water waste prevention measures are undertaken as part of an overall comprehensive program throughout the District’s service area directed to maximizing the availability of water for all customers while considering priorities of use by category (i.e. domestic health and safety). A Water Conservation Ordinance was adopted by the Board of Directors in 2009 as Ordinance No. 09-07-02 Comprehensive Water Conservation Program. This Ordinance was updated in 2014 (Ordinance No. 2014-10-03, Appendix D) as a response to California’s latest drought and to incorporate the State’s mandatory water waste restrictions and the District declared a shortage level two by resolution in August 2014. The Ordinance established a step by step plan for achieving water use efficiency and managing demand in times of a water shortage emergency throughout the District.

Ordinance No. 2014-10-03 constitutes permanent mandatory conservation requirements for all water users and additional requirements for commercial water users related to:

- Limits on Irrigation Practices
- Limits on water hours
- Limits on watering duration
- Efficient irrigation systems
- No water flow or runoff
- No Washing Down Hard or Paved Surfaces
- Obligation to Fix Leaks, Breaks or Malfunctions
- Re-circulating Water Required for Water Fountains and Decorative Water Features
- Swimming Pool and Spa Construction and Operations Best Practice
- Limits on Washing Vehicles
- Drinking Water Served Upon Request Only
- Commercial Lodging Establishments Must Provide Guests Option to Decline Daily Linen Services
- No Installation of Single Pass Cooling Systems
- No Installation of non-re-circulating Water Systems in Commercial Car Wash and Laundry Systems

- Restaurants Required to Use Water Conserving Dish Wash Spray Valves
- Commercial Car Wash Systems

Additionally, Ordinance 2014-10-03 establishes four water supply shortage response levels with increasing restrictions on water use in response to worsening drought or emergency conditions and decreasing supplies as described in Section 5. The current stage 2 conservation shortage level imposes mandatory water use restrictions and projects up to 20 percent water savings. In addition to the permanent conservation requirements described above, a stage 2 shortage imposes the following:

- Watering Days: Watering is limited to three days per week in the summer and one day per week during the winter according to the schedule posted on the District's website.
- Obligation to fix leaks, breaks, or malfunctions: These must be repaired within 48 hours.
- Limits on filling man-made lakes or ponds: This is prohibited except to sustain aquatic life of significant value that have been actively managed within the water feature prior to declaration of a supply shortage.
- Limits on washing vehicles: Vehicles may only be washed with hand-held buckets, hand-held hoses with a shutoff device, high pressure/low volume wash systems, or at commercial car washing facilities that use re-circulating water systems.
- Limits on re-filling residential swimming pools and spas: Re-filling more than one foot of potable water is prohibited.
- New pool construction: Owners, operators, and contractors must follow the District's Best Practices.
- Limits on use of potable water for construction: The use of potable water for construction is only permitted by a construction water use permit; otherwise recycled water must be used.

The District has implemented a residential audit program to help customers reduce their water use and bills. The first step in assisting the customers with water use efficiency is to identify customers with relatively high consumption and possible leaks. The District has developed and implemented a targeting strategy by means of work order codes, meter reading codes, evaluating abnormal water bills, and consumption comparisons. These work order and meter read codes were implemented in 1995 and have been modified periodically to increase efficiency within the conservation program. Table 4-1 summarizes the District's approach to performing audits.

Table 4-1: Audit Program

Audit Type	Generated by	Actions Taken
Audit 1 (A1)	Billing generated. Evaluated at the billing stage looking for abnormal consumption.	Meter readers make site visit to verify the meter read. Leak detection & notification.
Audit 2 (A2)	Customer generated.	Meter readers make site visit to verify the meter read. Leak detection.
Audit 3 (A3)	Staff review of monthly water consumption by customer type.	Review consumption history. Provide customer notification and information.
High Consumption Notifications (HC)	Customer Service and WUE Staff.	WUE staff contacts customers whose water use is abnormal, trending high, or otherwise warrants investigation. Invitation for Site Survey (SS) provided as well as District information related to Conservation Ordinance and WUE programs.
Site Surveys (SS)	Customer or WUE Staff	WUE staff meets on-site with customer to review water use patters, check for leaks, review/adjust irrigation system, recommend changes, and market District programs, rebates, and events.
Water Use Reports	Customer service and WUE team provides data to consultant who develops water use reports and on-line customer portal.	Customers are sent a bi-monthly water use report as well as given access to on-line customer portal. Leaks indicated, water use drought targets provided, as well as information about District's program and event activity.
Other Work Orders		
Pressure Check	Customer generated.	Field personnel obtain static and residual pressure at a customer's home and provides an A2 audit when necessary.
Meter Leak Notifications	Customer call, Customer Service Department, or Meter Reader	Site visit as soon as possible to repair, if needed.

Table 4-2 provides a summary of all audits and work orders conducted by the District over the last five years by year.

Table 4-2: Audit Program Implementation (FY 2010-11 to 2014-15)

Audits Single Family	2011	2012	2013	2014	2015
Audit 1 (A1)	39	148	203	338	263
Audit 2 (A2)	195	322	292	239	234
Audit 3 (A3)	1014	734	1218	622	55
High Consumption Notifications (HC)					385
Site Surveys (SS)					188
Water Use Reports	0	0	0	0	27,500
Pressure Check	53	63	72	72	33
Meter Leak Notifications	521	483	673	686	373

4.2 Metering

The District requires all new water connections to be metered. All of the District's domestic and recycled customer services are metered. The District charges customers by volume of use based on unit prices per billing unit of 100 cubic feet in addition to a fixed meter charge. The District promotes the use of dedicated landscape meters for commercial facilities. Since wastewater charges are based on metered water usage, there is a financial incentive for customers to separately meter interior uses and landscape.

As of January 2016, the District's dedicated irrigation meter and single-family residential services are all given water budgets as part of the District's budget-based rate structure. Water budgets are based on irrigated area and the evapotranspiration rates for a given billing period and residential budgets also factor in household size.

The District does have Automated Meter Reading (AMR) and Automated Metering Infrastructure (AMI). AMR is more prevalent in the newer Rancho Mission Viejo communities as well as in Coto de Caza. In the fall of 2015, the District, as part of its drought response, installed AMI meters on the top 150

dedicated irrigation services that use potable water. District staff monitors the water use of these accounts to assist customers in improving their irrigation efficiencies and for the District to view compliance with the District's Conservation Ordinance and mandatory water waste restrictions. Leaks can be viewed in real-time and notifications of leak alerts are given to irrigation customers so they can proactively fix leaks.

4.3 Conservation Pricing

The District has implemented a conservation-based rate structure since 1991 and bills all customer classes based on the volume of water consumed (measured in hundred cubic feet, or CCF). In 1991, the District implemented a residential ascending five block tiered-rate pricing structure that recovers cost for providing services while creating an economic incentive to use water efficiently. Non-residential customers (commercial and dedicated irrigation accounts) were charged uniform rates based on water consumption.

In 2015, as part of a long-term effort to properly recover costs and motivate efficiency through rate design, the District began the transition to a budget-based tiered rate structure. The new budget-based tiered rate structure establishes water budgets and tiered rates for single-family residential customers and dedicated irrigation customers based on factors such as occupancy and irrigated area. For multi-family customers, the rate structure is not tied to budgets but is based on an ascending five tier structure. Only commercial accounts remain on uniform rates.

Single-family residential budgets are comprised of both indoor and outdoor budgets. Each single-family residential customer will be allocated a reasonable amount of water for their monthly use, split into indoor and outdoor water budgets. For residential customers, the rate structure for the volumetric charge has five tiers. Residential customers who stay within their water budget remain in the first two tiers:

- Tier 1: Indoor Water Budget
- Tier 2**:** Outdoor Water Budget
- Tier 3: 101% to 150% of Total Water Budget
- Tier 4: 151% to 200% of Total Water Budget
- Tier 5: Over 201% of Total Water Budget

Figure 4-1 below provides an overview of how the indoor and outdoor budgets are calculated for single-family residential accounts.

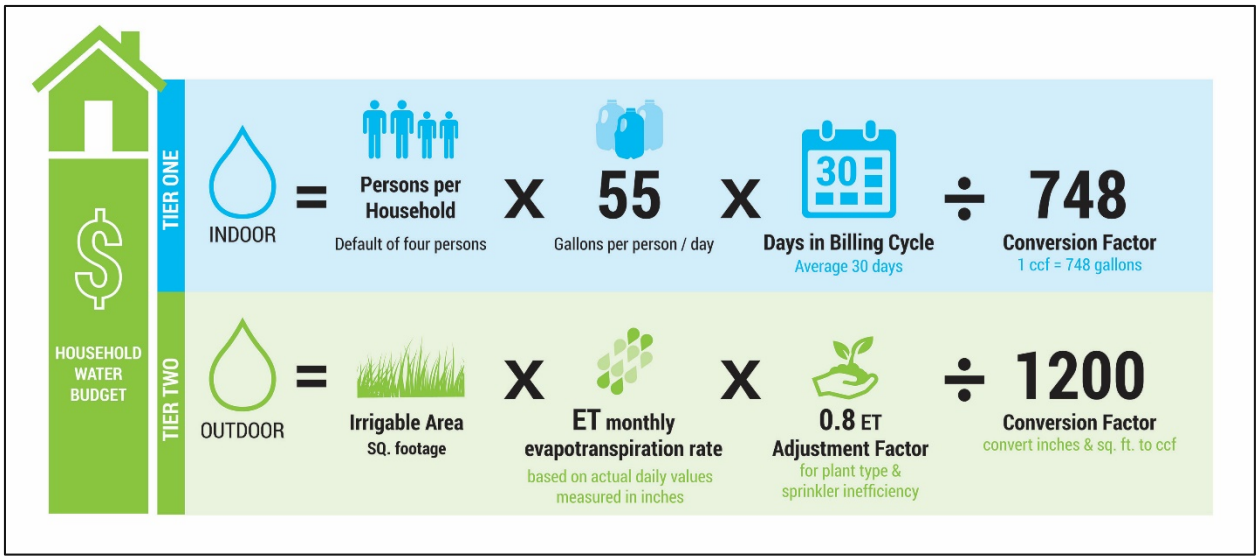


Figure 4-1: Single Family Residential Budget

Dedicated irrigation water budgets are comprised of just an outdoor water budget. Each dedicated irrigation account will be allocated a reasonable amount of water for their monthly use, based on the irrigable area served by that irrigation account (meter) and the evapotranspiration for the billing period. The rate structure for the volumetric charge has five tiers. Irrigation customers who stay within their water budget remain in the first two tiers:

- Tier 1: 50% of Outdoor Budget
- Tier 2: 100% of Outdoor Budget
- Tier 3: 101% to 150% of Outdoor Budget
- Tier 4: 151% to 200% of Outdoor Budget
- Tier 5: Over 201% of Outdoor Budget

Figure 4-2 below illustrates how the outdoor budget for dedicated irrigation accounts is calculated:

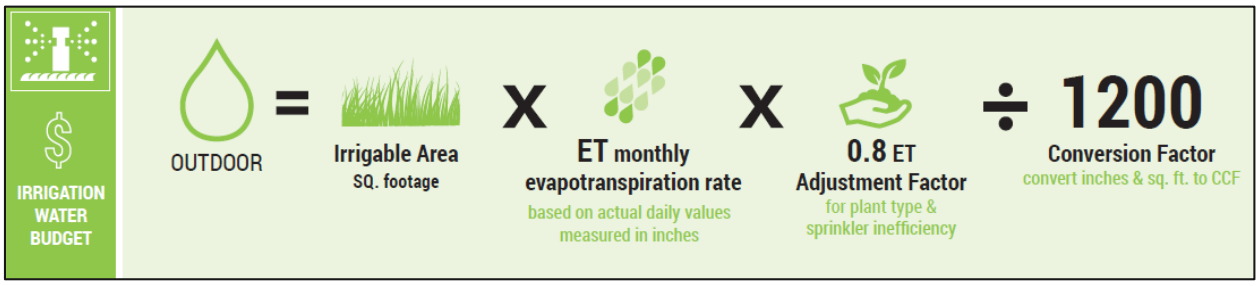


Figure 4-2: Outdoor Budget for Dedicated Irrigation Accounts

In order to properly assign a budget, evapotranspiration rates are required. The District has worked with DWR to bring two new weather stations into the California Irrigation Management Information System

(CIMIS). CIMIS station #241 is based in San Clemente in the community of Talega and CIMIS station #245 is located in Coto de Caza.

The District has built into the budget calculations a drought factor that can reduce a budget by a given percentage as necessary. This provides the District with a tool to manage demand based on water shortage conditions.

The District is committed to implementing this innovative and conservation-based rate structure for the foreseeable future and make changes to it as required over time. Detailed information about the District's budget-based rate structure can be found at **www.SMWD.com/rates**.

4.4 Public Education and Outreach

The District recognizes the importance of water conservation and protection of water resources of the State. As a matter of policy and operational practice, the District seeks to maximize the beneficial use of available water resources. Therefore, it is the policy of the District to discourage and prevent water waste, and to encourage various water conservation methods.

The District's Local Public Information Programs

The District's outreach and education programs complement water conservation programs implemented by Metropolitan and MWDOC. The District provides water conservation tips and helpful information for customers on its website and has the following programs designed to increase public awareness.

Bi-Monthly Newsletter – The District publishes a bi-monthly newsletter called OnTap. The newsletter discusses a variety of topics, including water conservation, water reclamation, and landscape management. The newsletter is distributed to each customer as part of the billing cycle. This involves a mailing of approximately 50,000 newsletters bi-monthly**.**

Bi-Monthly Bill Insert – The District also publishes a bi-monthly bill insert to provide customers with messages during the months when OnTap is not produced. Messages include quick conservation tips, Home Gardener Workshop class information and upcoming event information. The mailing is the same as OnTap with a production of 50,000 inserts. Both the OnTap and bill insert are available for viewing and downloading on the District's website (www.smwd.com).

Water Awareness Festival - This annual event is held by the District during Water Awareness Month in May. It is a family fun, education event with crafts, entertainment and activities geared towards water and conservation education. This event typically attracts over 1,000 residents and customers.

Communication with Facebook and Twitter - In 2009, the District created Facebook and Twitter pages (@SMWDwater) to increase and streamline communication with its customers. In 2015, the WUE team created an Instagram account which focusses on outdoor efficiency and landscape design. Each week, followers on both sites continue to increase and the District recognizes this social media tool as an invaluable way to communicate with the customers and key stakeholders.

Educational Brochures – The District has developed four educational brochures which are available for customers to view and download from the District's website. These brochures include information about the following:

- **Water Quality**: Describes the source of water in the District's service area and provides specific information regarding water quality issues such as disinfectants, Cryptosporidium, lead, and monitoring programs.
- **Water Costs:** Describes the District's tiered rate structure, imported water cost, energy cost, availability of supply and provides detailed instructions on how a customer can read their water bill to determine their usage patterns.
- **Water Conservation**: Explains the need to conserve water based on limited supply in a semi-arid region and the District's water conservation programs, including voluntary conservation programs and mandatory curtailment. Also provides water saving suggestions, such as installation of low-flow fixtures, landscape irrigation practices, and other water saving tips. The focus is on landscape irrigation efficiency as well as year-round conservation ordinance water waste prohibitions.
- **Water Wise Landscaping**: Comprehensive guide to drought tolerant planting, soil analysis, plant selection, landscape maintenance and irrigation practices. Also provides suggestions on proper watering, fertilizing and mowing of turf grass. (www.OCplants.org)
- **Customizable Watering Schedule**: The District maintains a website where customers can generate custom watering schedules based on plant type and sprinkler system. (www.OCplants.org/calc/)

Speaker Program – The District's Public Affairs efforts include a variety of presentations designed to convey the water conservation message to local organizations including homeowner associations, service clubs, business organizations, church groups, and public and private schools. The District and MWDOC have implemented this program aggressively. MWDOC's regional water education program began in 1973 and provides water education to Orange County students in grades kindergarten through high school. The program teaches students about the water cycle, the importance and value of water and water conservation.

Chiquita Treatment Plant Field Trips - The District offers an on-site field trip to small student groups along with the Boy and Girls Scouts within the District's service area. The educational field trip consists of touring Chiquita Water Reclamation Plant, hands-on water experiments, an explanation of the District's agency structure including the board of directors and the role they play, and an educational video focusing on urban runoff as well as a conservation presentation with a question-and-answer period.

SustainaBlue Landscape Workshop Series – The District offers various workshops for customers to learn from landscaping and design professionals. Details about the workshops offered are available on the District's website.

SustainaBlue Water Heroes – The District awards residents, businesses, students, and organizations every month who have demonstrated a commitment to efficiency and recognizes them at District Board meetings as well as promotes their efforts through traditional and social media.

MWDOC's Regional Public Information Programs

The District participates in public education and outreach programs administered by the District's wholesaler, MWDOC. MWDOC has established an extensive public education and outreach program to

assist its retail agencies in promoting water use efficiency awareness within their service areas. MWDOC's public education and outreach programs consist of five primary activities as described below.

MWDOC's public education and outreach programs are described below:

School Education Programs

MWDOC school education programs reach more than 100,000 Orange County students per year. The program has elementary and high school components.

- **Elementary School Program –** More than 60,000 students throughout Orange County are reached through assemblies hosted by the Discovery Science Center. MWDOC holds a $220,000 contract with the Discovery Science Center, funded proportionally by the participating MWDOC retail agencies. After the assembly, educational hand-out materials and activities are provided to teachers and students in order to encourage further water-related education at home. These materials include a recycled water-themed bag with conservation messaged school supplies, and a 16-page "Journey through Water" activity book produced and printed by MWDOC.
- **Water Education Poster and Slogan Contest -** Kindergarten through Sixth grade students are encouraged by the District to enter the county-wide Poster and Slogan contest by submitting artwork and slogans based on a water conservation theme. Winning artwork and slogans submitted by students in the District service area are recognized by the District Board of Directors during a regular board meeting. Winning students also receive a water conservation-related gift basket and are recognized in the District's OnTap newsletter.
- **High School Program** is new in 2015-16 and will reach students in 20 high schools in Orange County. The program is administered by MWDOC and operated by two contractors, the OC Department of Education and the Ecology Center. Through the three-year contract, those agencies will train more than 100 county teachers on water education on topics such as, water sources, water conservation, water recycling, watersheds, and ecological solutions for the benefit of their current and future students. Teachers will learn a variety of water conservation methods, such as irrigation technology, rainwater harvesting, water recycling, and water foot-printing through a tour at the Ecology Center facility. These trainings allow teachers to support student -led conservation efforts. The program will reach a minimum of 25,000 students by providing in-classroom water education and helping students plan and implement campus wide "Water Expos" that will allow peer-to-peer instruction on water issues. The $80,000 program is funded by participating agencies.

Value of Water Communication Program

MWDOC administers this program on behalf of 14 agencies. The $190,000 program involves the water agencies developing 30 full news pages that will appear weekly in the Orange County Register, the largest newspaper in the county, with a Sunday readership of 798,000. The campaign will educate OC residents and business leaders on water infrastructure issues and water use efficiency measures, as well as advertise water related events and other pertinent information.

Quarterly Water Policy Dinners

The Water Policy Dinner events attract 225 to 300 water and civic leaders every quarter. The programs host speakers topical to the OC water industry, with recent addresses from Felicia Marcus of the state

water board and Dr. Lucy Jones, a noted expert on earthquakes and their potential impact on infrastructure.

Annual Water Summit

The annual Water Summit brings together 300 Orange County water and civic leaders with state and national experts on water infrastructure and governance issues. The half-day event has a budget of $80,000 per year. Portions of the cost are covered by attendance and sponsorships, while MWDOC splits a portion with its event partner, the Orange County Water District.

Water Inspection Trips

Water Inspection trips take stakeholders on tours of the Colorado River Aqueduct, California Delta and other key water infrastructure sites. The public trips are required under Metropolitan's regulations. While Metropolitan covers the cost of the trips, MWDOC has two members of the public affairs staff that work diligently on identifying OC residents and leaders to attend. MWDOC staff also attends each trip. In the past year, MWDOC participated in a dozen trips, each taking an average of 30 residents. MWDOC also works with Metropolitan on special trips to educate County Grand Jurors the key water infrastructure.

4.5 Programs to Assess and Manage Distribution System Real Loss

SB-1420 signed into law in September 2014 requires urban water suppliers that submit UWMPs to calculate annual system water losses using the water audit methodology developed by the AWWA. SB 1420 requires the water loss audit be submitted to DWR every five years as part of the urban water supplier's UWMP. Water auditing is the basis for effective water loss control. DWR's UWMP Guidebook include a water audit manual intended to help water utilities complete the AWWA Water Audit on an annual basis.

The District performed a forensic water loss audit with the assistance of an outside consultant to prepare for these new regulations. The water loss audit was completed for the District from July 1st, 2013 to June 1st, 2014. The resulting performance indicators showed that the District operates an extremely tight system with non-revenue water accounting for less than 5 percent of the total potable water supplied. The District also performed a component analysis on its distribution system to focus its efforts on sustaining a low water loss volume.

4.6 Water Conservation Program Coordination and Staffing Support

Since 2010, the District has committed dedicated full-time staff to implementing water use efficiency programs. In 2014 the District expanded the water use efficiency staff to one full-time Water Use Efficiency Administrator and one full-time Water Use Efficiency Specialist. In early 2015 the WUE staff added another full-time Water Use Efficiency Specialist position to bring the program staff up to three full time employees.

The Water Use Efficiency Specialists report to the Water Use Efficiency Administrator and are responsible for:

- Coordinate, schedules, and conducts site surveys to help customers save water and improve efficiency.

- Identifies and reaches out to high water use customers to market District programs and offer site surveys.
- Prepares water conservation materials and rebate information to be used as handouts and postings on the District website.
- Represents the District at community and special events related to conservation and attend and participates in regional workshops.
- Plans, schedules, and teaches community workshops on subjects related to water conservation.

The Water Use Efficiency Administrator role is to support other District departments in maintaining the District's water supply reliability, manage the District's water use efficiency program, and participate in water policy discussions at the local, regional and state level. The Water Use Efficiency Administrator also assists District customers, particularly Cities and Homeowners Associations with the conversion from potable water to recycled water to help the District meet per capita reduction goals.

The District has funded water conservation programs from the Operating Budget for each FY. In FY 2014-2015, the District supplemented the Operating Budget with Reserve Funds as a drought response to achieve the State's Emergency Conservation drought reduction target. Table 4-3 highlights the previous FY budgets and estimates future conservation budgets.

Table 4-3: Water Education School Program Assemblies

Year	Water Conservation Budget (does not include salary and benefits)
2010	$25,900
2011	$26,100
2012	$41,700
2013	$32,700
2014	$54,000
2015	$287,000
2016	$444,000
2017	$250,000
2018	$250,000
2019	$250,000
2020	$250,000

4.7 Other Demand Management Measures

During the past five years, FY 2010-11 to 2014-15, the District, with the assistance of MWDOC, has implemented many water use efficiency programs for its residential, CII, and landscape customers as described below. Appendix H provides quantities of rebates and installations achieved under each program since program inception. The District will continue to implement all applicable programs in the next five years.

4.7.1 Residential Programs

WaterSmart Home Water Reports

The District implemented a pilot program in January 2015 with WaterSmart Software to provide 2,000 customers with enhanced water use information through home water use reports and an on-line customer dashboard. This pilot program resulted in program participants using approximately 2.5 percent less water than a control group. The District has expanded the program to a broader customer base. Approximately 28,000 single-family residential customers receive home water reports and all customers, regardless of customer classification, are able to login to the customer portal to view pertinent water use information. The District has benefited from its customers receiving timely and actionable information about their water use and this type of program will be carried on into the future.

High Efficiency Clothes Washer Rebate Program

The High Efficiency Clothes Washer (HECW) Rebate Program provides residential customers with rebates for purchasing and installing WaterSense labeled HECWs. HECWs use 35-50 percent less water than standard washer models, with savings of approximately 9,000 gallons per year, per device. Devices must have a water factor of 4.0 or less, and a listing of qualified products can be found at ocwatersmart.com. There is a maximum of one rebate per home; the District offers a $100 rebate.

High Efficiency Toilet Rebate Program

The largest amount of water used inside a home, 30 percent, goes toward flushing the toilet. The High Efficiency Toilet (HET) Rebate Program offers incentives ($100 rebate from the District) to residential customers for replacing their standard, water-guzzling toilets with HETs. HETs use just 1.28 gallons of water or less per flush, which is 20 percent less water than standard toilets. HETS save an average of 38 gallons of water per day while maintaining high performance standards.

4.7.2 CII Programs

Water Smart Hotel Program

Water used in hotels and other lodging businesses accounts for approximately 15 percent of the total water use in commercial and institutional facilities in the United States. The Water Smart Hotel Program provides water use surveys, customized facility reports, technical assistance, and enhanced incentives to hotels that invest in water use efficiency improvements. Rebates available include high efficiency toilets, ultralow volume urinals, air-cooled ice machines, weather-based irrigation controllers, and rotating nozzles.

Socal Water$mart Rebate Program for Commercial Landscapes

The District through MWDOC offers financial incentives under the Socal Water$mart Rebate Program which offers rebates for various water efficient devices to CII customers, such as high efficiency toilets, ultralow volume urinals, connectionless food steamers, air-cooled ice machines, pH-cooling towers controller, and dry vacuum pumps.

4.7.3 Landscape Programs

Turf Removal Program

The Orange County Turf Removal Program offers incentives to remove non-recreational turf grass from commercial properties throughout the County. This program is a partnership between MWDOC, Metropolitan, and local retail water agencies. The goals of this program are to increase water use efficiency within Orange County, reduce runoff leaving the properties, and evaluate the effectiveness of turf removal as a water-saving practice. Participants are encouraged to replace their turf grass with drought-tolerant landscaping, diverse plant palettes, and artificial turf, and they are encouraged to retrofit their irrigation systems with Smart Timers and drip irrigation (or to remove it entirely).

Water Smart Landscape Program

MWDOC's Water Smart Landscape Program is a free water management tool for homeowner associations, landscapers, and property managers. Participants in the program use the Internet to track their irrigation meter's monthly water use and compare it to a custom water budget established by the program. This enables property managers and landscapers to easily identify areas that are over/under watered and enhances their accountability to homeowner association boards.

Smart Timer Rebate Program

Smart Timers are irrigation controllers that are either weather-based irrigation controllers (WBIC) or soil moisture sensor systems. WBICs adjust automatically to reflect changes in local weather and site-specific landscape needs, such as soil type, slopes, and plant material. When WBICs are programmed properly, turf and plants receive the appropriate amount of water throughout the year. During the fall months, when property owners and landscape professionals often overwater, Smart Timers have been proven to be capable of saving significant amounts of water.

Rotating Nozzles Rebate Program

The Rotating Nozzle Rebate Program provides incentives to residential and commercial properties for the replacement of high-precipitation rate spray nozzles with low-precipitation rate multi-stream, multi-trajectory rotating nozzles. The rebate offered through this program is intended to offset the cost of the device and installation.

Spray to Drip Rebate Program

The Spray to Drip Pilot Rebate Program offers residential and commercial customers rebates for converting planting areas irrigated by spray heads to drip irrigation. Drip irrigation systems are very water-efficient. Rather than spraying wide areas, drip systems use point emitters to deliver water to specific locations at or near plant root zones. Water drips slowly from the emitters either onto the soil surface or below ground. As a result, less water is lost to wind and evaporation.

Socal Water$mart Rebate Program Commercial for Landscapes

The District, through MWDOC, also offers financial incentives under the SoCal Water$mart Rebate Program for a variety of water efficient landscape devices, such as Central Computer Irrigation Controllers, large rotary nozzles, and in-stem flow regulators.

SustainaBlue Design Studio

The District will help eligible homes to a design custom low water landscape for their yards. Participants receive a 45 minute consultation with a local landscape designer, a landscape design drawing, a customized plant palette, suggested irrigation adjustments and watering guide, a general plant maintenance plan, and information on District programs and rebates.

Landscape Conversion Kit Rebate

The District offers rebates for replacing lawns and high water shrubs. My Avant Garden Native Front Yard Conversion Kits are available for purchase and include a detailed design plan, live California native plants, step-by-step installation instructions, educational classes, and customer support.

Tree of Life Nursery's Design Assistance Rebate

The District will reimburse residents for a $45, half hour garden design consultation with a "Designer in Residence" at the Tree of Life Nursery to help them convert their landscaping to a more sustainable native plant garden. After the consultation, participants also receive a voucher for a ten percent discount on their next plant purchase.

HOA and Large Landscape

The District provides large landscape customers like homeowners associations' with resources, tools, and incentives to efficiently manage water and maintain healthy aesthetic landscapes. The District offers free professional landscape training classes, various rebates, water management programs, landscape irrigation surveys, and informational luncheons.

WaterDex Remote Irrigation Pilot Program

In January – June 2015, the District distributed approximately 500 WaterDex units to homeowners. WaterDex devices attach onto existing sprinkler controllers and allow residents to easily and remotely adjust irrigation runtimes based with a dial that ranges from zero to one hundred, which corresponds to the percentage of summer watering required. Homeowners are given a weekly email indicating what the WaterDex percentage value is that way residents can make adjustments to their watering throughout the year. This pilot program generated water savings of 27.7 gallons per day per home which represents 15 AFY of water savings and 75 AF over the device's five year lifetime. The District expects to implement similar outdoor programs using this or other emerging water smart technology.

5 WATER SHORTAGE CONTINGENCY PLAN

5.1 Overview

Due to current and potential future water supply shortages, Governor Brown issued a drought emergency proclamation on January 2014 and signed the 2014 Executive Order that directs urban water suppliers to implement drought response plans to limit outdoor irrigation and wasteful water practices if they are not already in place. Pursuant to California Water Code Section 106, potable water use is the highest beneficial use of water with the next highest use as irrigation. This section describes the water supply shortage policies Metropolitan and the District have in place to respond to events including catastrophic interruption and reduction in water supply.

5.2 Shortage Actions

5.2.1 Metropolitan Water Surplus and Drought Management Plan

Metropolitan evaluates the level of supplies available and existing levels of water in storage to determine the appropriate management stage annually. Each stage is associated with specific resource management actions to avoid extreme shortages to the extent possible and minimize adverse impacts to retail customers should an extreme shortage occur. The sequencing outlined in the Water Surplus and Drought Management (WSDM) Plan reflects anticipated responses towards Metropolitan's existing and expected resource mix.

Surplus stages occur when net annual deliveries can be made to water storage programs. Under the WSDM Plan, there are four surplus management stages that provides a framework for actions to take for surplus supplies. Deliveries in Diamond Valley Lake (DVL) and in SWP terminal reservoirs continue through each surplus stage provided there is available storage capacity. Withdrawals from DVL for regulatory purposes or to meet seasonal demands may occur in any stage.

The WSDM Plan distinguishes between shortages, severe shortages, and extreme shortages. The differences between each term is listed below.

- Shortage: Metropolitan can meet full-service demands and partially meet or fully meet interruptible demands using stored water or water transfers as necessary.
- Severe Shortage: Metropolitan can meet full-service demands only by using stored water, transfers, and possibly calling for extraordinary conservation.
- Extreme Shortage: Metropolitan must allocate available supply to full-service customers.

There are six shortage management stages to guide resource management activities. These stages are defined by shortfalls in imported supply and water balances in Metropolitan's storage programs. When Metropolitan must make net withdrawals from storage to meet demands, it is considered to be in a shortage condition. Figure 5-1 gives a summary of actions under each surplus and shortage stages when an allocation plan is necessary to enforce mandatory cutbacks. The goal of the WSDM Plan is to avoid Stage 6, an extreme shortage.

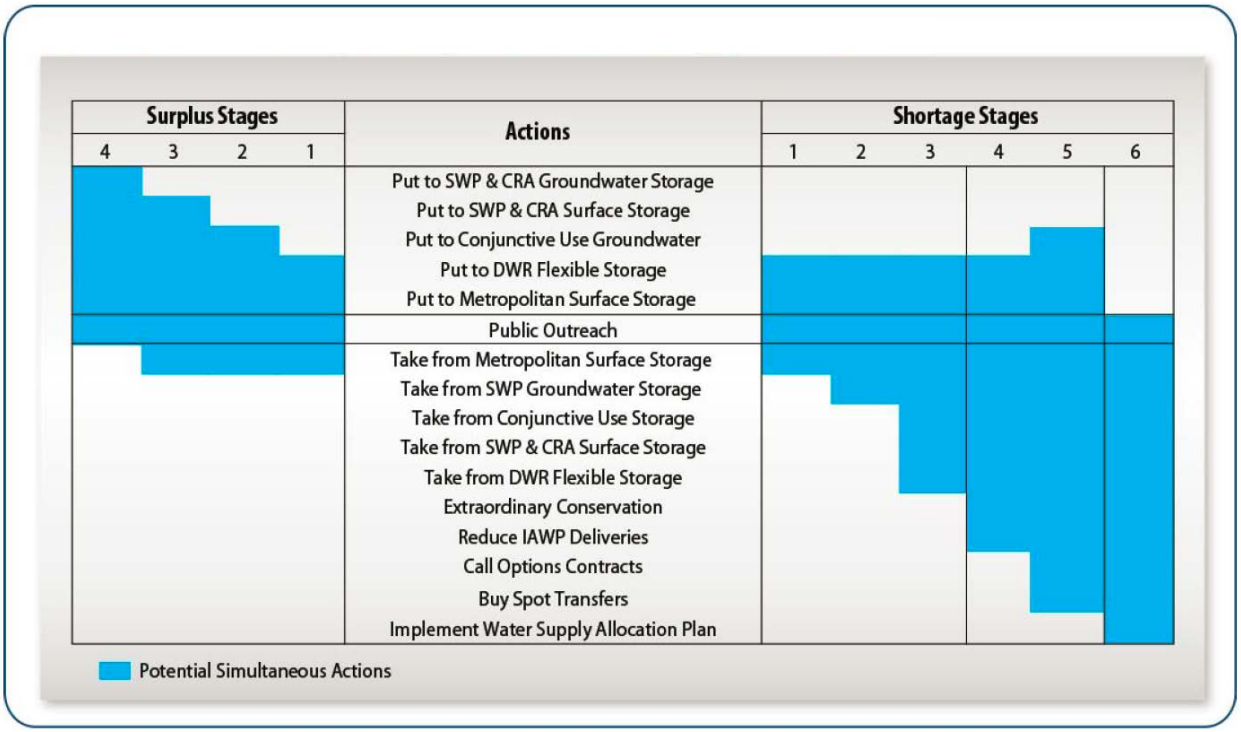


Figure 5-1: Resource Stages, Anticipated Actions, and Supply Declarations

Metropolitan's Board of Directors adopted a Water Supply Condition Framework in June 2008 in order to communicate the urgency of the region's water supply situation and the need for further water conservation practices. The framework has four conditions, each calling increasing levels of conservation. Descriptions for each of the four conditions are listed below:

- Baseline Water Use Efficiency: Ongoing conservation, outreach, and recycling programs to achieve permanent reductions in water use and build storage reserves.
- Condition 1 Water Supply Watch: Local agency voluntary dry-year conservation measures and use of regional storage reserves.
- Condition 2 Water Supply Alert: Regional call for cities, counties, member agencies, and retail water agencies to implement extraordinary conservation through drought ordinances and other measures to mitigate use of storage reserves.
- Condition 3 Water Supply Allocation: Implement Metropolitan's WSAP

As noted in Condition 3, should supplies become limited to the point where imported water demands cannot be met, Metropolitan will allocate water through the WSAP (Metropolitan, 2015 UWMP, May 2016).

5.2.2 Metropolitan Water Supply Allocation Plan

Metropolitan's imported supplies have been impacted by a number of water supply challenges as noted earlier. In case of extreme water shortage within the Metropolitan service area is the implementation of its WSAP.

Metropolitan's Board of Directors adopted the WSAP in February 2008 to fairly distribute a limited amount of water supply and applies it through a detailed methodology to reflect a range of local conditions and needs of the region's retail water consumers.

The WSAP includes the specific formula for calculating member agency supply allocations and the key implementation elements needed for administering an allocation. Metropolitan's WSAP is the foundation for the urban water shortage contingency analysis required under Water Code Section 10632 and is part of Metropolitan's 2015 UWMP.

Metropolitan's WSAP was developed in consideration of the principles and guidelines in Metropolitan's 1999 WSDM Plan with the core objective of creating an equitable "needs-based allocation". The WSAP's formula seeks to balance the impacts of a shortage at the retail level while maintaining equity on the wholesale level for shortages of Metropolitan supplies of up to 50 percent. The formula takes into account a number of factors, such as the impact on retail customers, growth in population, changes in supply conditions, investments in local resources, demand hardening aspects of water conservation savings, recycled water, extraordinary storage and transfer actions, and groundwater imported water needs.

The formula is calculated in three steps: 1) based period calculations, 2) allocation year calculations, and 3) supply allocation calculations. The first two steps involve standard computations, while the third step contains specific methodology developed for the WSAP.

Step 1: Base Period Calculations – The first step in calculating a member agency's water supply allocation is to estimate their water supply and demand using a historical based period with established water supply and delivery data. The base period for each of the different categories of supply and demand is calculated using data from the two most recent non-shortage fiscal years ending 2013 and 2014.

Step 2: Allocation Year Calculations – The next step in calculating the member agency's water supply allocation is estimating water needs in the allocation year. This is done by adjusting the base period estimates of retail demand for population growth and changes in local supplies.

Step 3: Supply Allocation Calculations – The final step is calculating the water supply allocation for each member agency based on the allocation year water needs identified in Step 2.

In order to implement the WSAP, Metropolitan's Board of Directors makes a determination on the level of the regional shortage, based on specific criteria, typically in April. The criteria used by Metropolitan includes, current levels of storage, estimated water supplies conditions, and projected imported water demands. The allocations, if deemed necessary, go into effect in July of the same year and remain in effect for a 12-month period. The schedule is made at the discretion of the Board of Directors.

Although Metropolitan's 2015 UWMP forecasts that Metropolitan will be able to meet projected imported demands throughout the projected period from 2020 to 2040, uncertainty in supply conditions can result

in Metropolitan needing to implement its WSAP to preserve dry-year storage and curtail demands (Metropolitan, 2015 UWMP, May 2016).

5.2.3 MWDOC Water Supply Allocation Plan

To prepare for the potential allocation of imported water supplies from Metropolitan, MWDOC worked collaboratively with its 28 retail agencies to develop its own WSAP that was adopted in January 2009 and amended in 2015. The MWDOC WSAP outlines how MWDOC will determine and implement each of its retail agency's allocation during a time of shortage.

The MWDOC WSAP uses a similar method and approach, when reasonable, as that of the Metropolitan's WSAP. However, MWDOC's plan remains flexible to use an alternative approach when Metropolitan's method produces a significant unintended result for the member agencies. The MWDOC WSAP model follows five basic steps to determine a retail agency's imported supply allocation.

Step 1: Determine Baseline Information – The first step in calculating a water supply allocation is to estimate water supply and demand using a historical based period with established water supply and delivery data. The base period for each of the different categories of demand and supply is calculated using data from the last two non-shortage fiscal years ending 2013 and 2014.

Step 2: Establish Allocation Year Information – In this step, the model adjusts for each retail agency's water need in the allocation year. This is done by adjusting the base period estimates for increased retail water demand based on population growth and changes in local supplies.

Step 3: Calculate Initial Minimum Allocation Based on Metropolitan's Declared Shortage Level – This step sets the initial water supply allocation for each retail agency. After a regional shortage level is established, MWDOC will calculate the initial allocation as a percentage of adjusted Base Period Imported water needs within the model for each retail agency.

Step 4: Apply Allocation Adjustments and Credits in the Areas of Retail Impacts and Conservation– In this step, the model assigns additional water to address disparate impacts at the retail level caused by an across-the-board cut of imported supplies. It also applies a conservation credit given to those agencies that have achieved additional water savings at the retail level as a result of successful implementation of water conservation devices, programs and rate structures.

Step 5: Sum Total Allocations and Determine Retail Reliability – This is the final step in calculating a retail agency's total allocation for imported supplies. The model sums an agency's total imported allocation with all of the adjustments and credits and then calculates each agency's retail reliability compared to its Allocation Year Retail Demand.

The MWDOC WSAP includes additional measures for plan implementation, including the following:

- Appeal Process – An appeals process to provide retail agencies the opportunity to request a change to their allocation based on new or corrected information. MWDOC anticipates that under most circumstances, a retail agency's appeal will be the basis for an appeal to Metropolitan by MWDOC.
- Melded Allocation Surcharge Structure – At the end of the allocation year, MWDOC would only charge an allocation surcharge to each retail agency that exceeded their allocation if MWDOC exceeds its total allocation and is required to pay a surcharge to Metropolitan. Metropolitan enforces

allocations to retail agencies through an allocation surcharge to a retail agency that exceeds its total annual allocation at the end of the 12-month allocation period. MWDOC's surcharge would be assessed according to the retail agency's prorated share (acre-feet over usage) of MWDOC amount with Metropolitan. Surcharge funds collected by Metropolitan will be invested in its Water Management Fund, which is used to in part to fund expenditures in dry-year conservation and local resource development.

- Tracking and Reporting Water Usage – MWDOC will provide each retail agency with water use monthly reports that will compare each retail agency's current cumulative retail usage to their allocation baseline. MWDOC will also provide quarterly reports on it cumulative retail usage versus its allocation baseline.
- Timeline and Option to Revisit the Plan – The allocation period will cover 12 consecutive months and the Regional Shortage Level will be set for the entire allocation period. MWDOC only anticipates calling for allocation when Metropolitan declares a shortage; and no later than 30 days from Metropolitan's declaration will MWDOC announce allocation to its retail agencies.

5.2.4 Santa Margarita Water District

The District Board of Directors adopted its Comprehensive Water Conservation Program Ordinance No. 2014-10-03 in October 2014, which established a staged water conservation program that will encourage reduced water consumption within the District through conservation, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and maximize the efficient use of water within the District. Along with permanent water conservation requirements, the District's Water Conservation and Water Supply Shortage program consists of the following four stages found in Table 5-1 to respond to a reduction in potable water available to the District for distribution to its customers. Stage 1 water use measures are in effect at all times unless a mandatory conservation stage (stages 2, 3, and 4) is issued by the District's Board of Directors (Santa Margarita Water District, Ordinance No. 2014-10-03, October 2014).

Table 5-1: Stages of Water Shortage Contingency Plan

Retail Stages of Water Shortage Contingency Plan		
Stage	Complete Both	
	Supply Reduction[1]	Water Supply Condition
1	Up to 10%	Exists when the District encourages customers to voluntarily conserve water.
2	Up to 20%	Exists when the District determines water supply shortage exists and consumer demand reduction necessary to use water efficiently and respond to water conditions.
3	Up to 40%	Exists when the District notifies residents and businesses significant reduction in consumer demand is necessary to maintain sufficient water supplies for public health and safety.
4	Over 40%	Exists when the District declares severe drought conditions exists and significant reduction in consumer demand necessary to maintain sufficient water supplies for public health and safety.
[1] One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.		
NOTES: District Water Conservation Program		

5.3 Three-Year Minimum Water Supply

As a matter of practice, Metropolitan does not provide annual estimates of the minimum supplies available to its member agencies. As such, Metropolitan member agencies must develop their own estimates for the purposes of meeting the requirements of the Act.

Section 135 of the Metropolitan Water District Act declares that a member agency has the right to invoke its "preferential right" to water, which grants each member agency a preferential right to purchase a percentage of Metropolitan's available supplies based on specified, cumulative financial contributions to Metropolitan. Each year, Metropolitan calculates and distributes each member agency's percentage of preferential rights. However, since Metropolitan's creation in 1927, no member agency has ever invoked these rights as a means of acquiring limited supplies from Metropolitan.

As an alternative to invoking preferential rights, Metropolitan and its member agencies accepted the terms and conditions of Metropolitan's shortage allocation plan, which allocated imported water under limited supply conditions. In fact, in FY 2015-2016, Metropolitan implemented its WSAP at a stage level 3 (seeking no greater than 15 percent region reduction of water use), which is the largest reduction Metropolitan has ever imposed on its member agencies. This WSAP level 3 reduction was determined when Metropolitan water supplies from the SWP was at its lowest levels ever delivered and water storages declined greater than 1 MAF in one year.

MWDOC has adopted a shortage allocation plan and accompanying allocation model that estimates firm demands on MWDOC. Assuming MWDOC would not be imposing mandatory restrictions if Metropolitan is not, the estimate of firm demands in MWDOC's latest allocation model has been used to estimate the

minimum imported supplies available to each of MWDOC's retail agencies for 2015-2018. Thus, the estimate of the minimum imported supplies available to the District is 29,202 AFY as shown in Table 5-2 (MWDOC, Water Shortage Allocation Model, November 2015).

Table 5-2: Minimum Supply Next Three Years (AF)

Retail: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	29,202	29,202	29,202
NOTES: MWDOC Water Shortage Allocation Model			

5.4 Catastrophic Supply Interruption

Given the great distances that imported supplies travel to reach Orange County, the region is vulnerable to interruptions along hundreds of miles aqueducts, pipelines and other facilities associated with delivering the supplies to the region. Additionally, the infrastructure in place to deliver supplies are susceptible to damage from earthquakes and other disasters.

5.4.1 Metropolitan

Metropolitan has comprehensive plans for stages of actions it would undertake to address a catastrophic interruption in water supplies through its WSDM Plan and WSAP. Metropolitan also developed an Emergency Storage Requirement to mitigate against potential interruption in water supplies resulting from catastrophic occurrences within the southern California region, including seismic events along the San Andreas Fault. In addition, Metropolitan is working with the state to implement a comprehensive improvement plan to address catastrophic occurrences outside of the southern California region, such as a maximum probable seismic event in the Delta that would cause levee failure and disruption of SWP deliveries. For greater detail on Metropolitan's planned responses to catastrophic interruption, please refer to Metropolitan's 2015 UWMP.

5.4.2 Water Emergency Response of Orange County

In 1983, the Orange County water community identified a need to develop a plan on how agencies would respond effectively to disasters impacting the regional water distribution system. The collective efforts of these agencies resulted in the formation of the Water Emergency Response Organization of Orange County (WEROC) to coordinate emergency response on behalf of all Orange County water and wastewater agencies, develop an emergency plan to respond to disasters, and conduct disaster training exercises for the Orange County water community. WEROC was established with the creation of an indemnification agreement between its member agencies to protect each other against civil liabilities and to facilitate the exchange of resources. WEROC is unique in its ability to provide a single point of contact for representation of all water and wastewater utilities in Orange County during a disaster. This representation is to the county, state, and federal disaster coordination agencies. Within the Orange County Operational Area, WEROC is the recognized contact for emergency response for the water community, including the District.

5.4.3 Santa Margarita Water District

The District maintains interconnections with adjacent local water suppliers including MNWD, IRWD, TCWD, ETWD, City of San Juan Capistrano, and City of San Clemente. These interconnections serve as an emergency source of supply and to collectively increase the water supply delivery reliability for interconnected agencies.

The District also has 51 percent of the capacity in the 430 AF El Toro R-6 Domestic Water Reservoir which substantially increased the emergency storage within the District. The District also has 38 percent of the capacity in the 750 AF Upper Chiquita Reservoir, increasing its regional storage capacity to approximately 720 AF.

The District maintains a set of preparation actions to respond to various sorts of catastrophes. These actions items are listed below.

- ***Regional Power Outage:*** The District will coordinate with Southern California Edison and/or San Diego Gas and Electric for schedule of restoration of service. Sites with back-up power generators will check that the generators are functioning and assess their fuel requirements. The District will assess its reservoir levels and coordinate reduction of demand by providing back-up emergency pumps if necessary.
- ***Earthquake:*** The District will activate its emergency response plan and contact customers directly or through media as needed to curtail demand. The District will initiate mutual aid with its neighboring district, coordinate with the Department of Drinking Water (DDW), and issue health directives if necessary.
- ***Facility Failure:*** The District will isolate the facility and coordinate demand reduction as required. The District will issue appropriate health directives as needed and provide alternative service and initiate repairs or replacement of the facility.
- ***Water Supply Interruption:*** The District will curtail water demand reductions as appropriate to insure fire safety and health concerns and use its interconnections and storage if necessary.
- ***Water Supply Contamination:*** The District will notify the DDW, isolate systems that are contaminated, and issue health directives if necessary.

5.5 Prohibitions, Penalties and Consumption Reduction Methods

5.5.1 Prohibitions

The Comprehensive Water Program Ordinance No. 2014-10-03 lists water conservation requirements which shall take effect upon implementation by the District. These prohibitions shall promote the efficient use of water, reduce or eliminate water waste, and enable implementation of the District's Water Shortage Contingency Measures. The water use measures and the stages at which they take effect can be found in Table 5-3. It is important to note that the District is always implementing Stage 1 restrictions.

Table 5-3: Restrictions and Prohibitions on End Uses

Retail Only: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement ?
1	Landscape - Limit landscape irrigation to specific times	Irrigation prohibited between 8:00 a.m. and 6:00 p.m. any day	No
1	Landscape - Other landscape restriction or prohibition	Irrigation limited to fifteen minutes at most for unattended irrigation systems	No
1	Landscape - Restrict or prohibit runoff from landscape irrigation	-	No
1	Other - Prohibit use of potable water for washing hard surfaces	-	No
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Correct leaks, breaks, and other malfunctions in seven days after notice	No
1	Water Features - Restrict water use for decorative water features, such as fountains	Prohibit operating decorative water feature that does not use recirculated water	No
1	Other water feature or swimming pool restriction	Follow Best Practices for construction and operation of swimming pools	No
1	Other –Vehicle washing permitted if by bucket or hose with equipped automatic shut-off nozzle.	-	No
1	CII - Restaurants may only serve water upon request	-	No
1	CII - Lodging establishment must offer opt out of linen service	-	No
1	Other	Prohibit installation of single pass cooling systems	No

Retail Only: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement ?
1	Other	Prohibit installation of non-re-circulating water systems in new commercial conveyor car wash and commercial laundry operations	No
1	CII - Commercial kitchens required to use pre-rinse spray valves	-	No
1	Other	Commercial conveyor car wash systems required to have operational recirculating water systems	No
2	Landscape - Limit landscape irrigation to specific days	Irrigation limited to three days per week on District posted schedule. Irrigation in months of November through March limited to one day per week	Yes
2	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Correct leaks, breaks, and other malfunctions in two days after notice	Yes
2	Other water feature or swimming pool restriction	Prohibit filling man-made lakes or ponds to sustain aquatic life	Yes
2	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Prohibit cleaning vehicles except by use of hand-held bucket or at a commercial car washing facility that uses a recirculating water system	Yes
2	Other water feature or swimming pool restriction	Prohibit refilling of more than one foot of residential swimming pools or outdoor spas with potable water except to protect public health, safety, and welfare	Yes
2	Other water feature or swimming pool restriction	Follow District's Best Practices for swimming pools	Yes
2	Other	Potable water for construction use allowed only in accordance with	Yes

Retail Only: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement ?
		the provisions of a construction water use permit	
3	Landscape - Limit landscape irrigation to specific days	Irrigation limited to two days per week on District posted schedule. Irrigation in months of November through March is limited to one day per week	Yes
3	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Correct leaks, breaks, and other malfunctions in one day after notice	Yes
3	Other water feature or swimming pool restriction	Lake filling permit required to fill man-made lakes or ponds	Yes
3	Other	No new potable water service provided except with express permission from the District	Yes
3	Other	The District will suspend annexations to its service area	Yes
4	Landscape - Prohibit all landscape irrigation	-	Yes
4	Landscape - Prohibit certain types of landscape irrigation	Prohibit watering for agricultural or commercial nurseries except for livestock watering	Yes
4	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Water use at commercial car washes reduced by 50 percent except for health, safety, and welfare of the public	Yes
4	Other water feature or swimming pool restriction	Prohibit filling residential swimming pools, spas, ponds, or lakes	Yes

5.5.2 Penalties

Any customer who violates provisions of the Comprehensive Water Conservation Ordinance by either excess use of water or by specific violation of one or more of the applicable water use restrictions for a particular mandatory conservation stage may be cited by the District and may be subject to written notices, surcharges, fines, flow restrictions, disconnection, and termination of service.

The first instance of non-compliance will result in a citation from the District. The second and third instance of non-compliance will result in a fine not to exceed one hundred dollars and two hundred and fifty dollars, respectively. Fourth and subsequent instances of non-compliance will result in a fine not to exceed five hundred dollars ($500). In addition to fines, the District may, at its own discretion, install a water flow restrictor device and/or terminate service of the offending customer. The customer is responsible for any fees related to the installation and/or removal of any flow restricting device before the device is removed (Santa Margarita Water District, Ordinance No. 2014-10-03, October 2014). As a result of successful conservation, the District has not penalized any customers to date.

5.5.3 Consumption Reduction Methods

Table 5-4 lists the consumption reduction methods that will be used to reduce water use in restrictive stages.

Table 5-4: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods

Retail Only: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference
1	Other	Stage 1 Voluntary Conservation Measures
2	Other	Stage 2 Drought or Emergency Condition Conservation Measures
3	Other	Stage 3 Serious Drought Condition Conservation Measures
4	Other	Stage 4 Mandatory Conservation Measures
NOTES: District Water Conservation Program		

5.6 Impacts to Revenue

During a catastrophic interruption of local water supplies, prolonged drought, or water shortage of any kind, the District will experience a reduction in revenue due to reduced water sales. Throughout this period of time, expenditures may increase or decrease with varying circumstances. Expenditures may increase in the event of significant damage to the water system, resulting in emergency repairs. Expenditures may also decrease as less water is pumped through the system, resulting in lower power costs.

The District receives water revenue from a service charge and a commodity charge based on consumption. The service charge recovers costs associated with providing water to the serviced property. The service charge does not vary with consumption and the commodity charge is based on water usage. Rates have been designed to recover the full cost of water service in the charges. Therefore, the total cost of purchasing water would decrease as the usage or sale of water decreases. The intent of this approach is to insulate the District's necessary revenues from the vagaries of water use.

However, there are significant fixed costs associated with maintaining a minimal level of service. The District will monitor projected revenues and expenditures should an extreme shortage and a large

reduction in water sales occur for an extended period of time. To overcome these potential revenue losses and/or expenditure impacts, the District may use reserves. If necessary, the District may reduce expenditures by delaying implementation of its Capital Improvement Program and equipment purchases, and/or adjust the work force, implement a drought surcharge, and/or make adjustments to its water rate structure.

5.7 Reduction Measuring Mechanism

The District has a variety of mechanisms in place to determine water use reduction. All of the District's connections are metered and read monthly. Records of water usage are kept for analysis. The interval between water use readings can be increased in frequency for high water users during emergency situations. The District also tracks water imports and water production amounts daily and reports those values to appropriate departments for monitoring. The District coordinated with large irrigation customers to establish irrigation cycles and irrigation demands.

MWDOC provides each member agency with monthly water use reports that will compare each member agency's current cumulative retail usage to their allocation baseline.

6 RECYCLED WATER

Southern California discharges treated wastewater to the ocean every day that could potentially be reused to further minimize dependence on imported water sources. Reuse opportunities have continued to grow with public acceptance and increased economic viability. Recycled water provides flexibility and increases reliability during drought conditions as imported water supplies diminish. Recycled water is wastewater that is purified through primary, secondary and tertiary treatment and can be used for most non-potable water purposes such as landscape irrigation, as well as commercial and industrial processes defined by Title 22 requirements. The District's existing recycled water system provides a supplemental landscape irrigation supply within its service area.

6.1 Agency Coordination

There are a number of water agencies in south Orange County that provide wastewater collection and treatment to Title 22 recycled water standards. These agencies have been in the forefront of recycled water development to diversify water supplies in order to reduce their dependence on imported water for non-potable needs and because of limited groundwater supplies impacted by local geography. Each of the south Orange County agencies supplements their supply portfolio with recycled water when needed. The District's current non-potable water supply consists of urban runoff and tertiary recycled water.

6.2 Wastewater Description and Disposal

The District generates approximately 10.35 million gallons per day (MGD) of wastewater and provides sewer collection services to portions of the Cities of Rancho Santa Margarita, Mission Viejo, and San Clemente, as well as unincorporated areas of south Orange County. The District's wastewater system includes approximately 615 miles of pipe ranging from 6 inches to 42 inches in diameter, 20 sewer lift stations, 2 District owned wastewater treatment plants, and 3 jointly owned wastewater treatment plants as shown in Appendix I. The five existing wastewater treatment plants are:

- Oso Creek Water Reclamation Plant
- 3A Water Reclamation Plant
- J.B. Latham Treatment Plant
- Los Alisos Water Recycling Plant
- Chiquita Water Reclamation Plant

The Oso Creek Water Reclamation Plant (OCWRP) is owned and operated by the District and has a design capacity of 3 MGD. OCWRP diverts wastewater from the Oso Trunk Sewer and treats it to Title 22 tertiary levels where it is conveyed to the District's recycled water system where it is beneficially reused. The solids removed during treatment are returned to Oso Trunk Sewer for handling at the J.B. Latham Treatment Plant.

The 3A Water Reclamation Plant (WRP) is jointly owned by the District and MNWD and has been operated by the District since July 1, 2015. Wastewater diverted from the Oso Trunk Sewer is treated at

3A WRP to Title 22 tertiary levels prior to beneficial reuse in the MNWD and District's recycled water systems. Flows exceeding the 2.4 MGD plant tertiary capacity bypass 3A and flow to the J.B. Latham Treatment Plant. Solids are treated onsite. The plant has secondary treatment capacity of 6 MGD. The current tertiary treatment capacity is 2.4 MGD. The District is currently in design for the expansion of the tertiary treatment capacity to 6 MGD

J.B. Latham is a 13 MGD wastewater treatment plant that is owned and operated by Southern Orange County Wastewater Authority (SOCWA) that treats wastewater to secondary effluent standards prior to discharge through the San Juan Creek Ocean Outfall. The District has 2.25 MGD of capacity in the plant. J.B. Latham does not produce tertiary treated water. OCWRP, 3A, and J.B. Latham provide wastewater treatment for a majority of the City of Mission Viejo.

Approximately 670,000 GPD of wastewater from the northeastern portion of Mission Viejo in the District's service area is conveyed to the Los Alisos Water Recycling Plant. The Los Alisos plant is owned and operated by IRWD and the District has an agreement with IRWD to treat up to 0.7 MGD of wastewater. Treated wastewater that is not beneficially reused is discharged through the Aliso Creek Ocean Outfall.

Wastewater flows from Rancho Santa Margarita, Coto de Caza, Talega, Ladera Ranch, Sendero, Esencia, parts of IRWD and TCWD, and other areas within the District service area are treated at the Chiquita Water Reclamation Plant (CWRP). The District owns and operates the CWRP which has a current secondary design capacity of 9 MGD and the CWRP has tertiary treatment capacity of 6 MGD which is distributed to the District's recycled water distribution system. Secondary treated wastewater is discharged to the San Juan Creek Ocean Outfall if the recycled water treatment capacity is reached, there is no recycled demand, or seasonal storage reservoirs are full.

Table 6-1 summarizes the 2015 estimated wastewater generated and collected by the District within its service area. Table 6-2 represents the approximate 2015 wastewater treated, recycled and disposed of at each treatment plant within the District's service area.

Table 6-1: Wastewater Collected within Service Area in 2015

Retail: Wastewater Collected within Service Area in 2015						
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected in 2015 (AF)	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located within UWMP Area?	Is WWTP Operation Contracted to a Third Party?
Santa Margarita Water District	Metered	1,896	Santa Margarita Water District	Oso Creek Water Reclamation Plant	Yes	No
Santa Margarita Water District	Metered	0	Santa Margarita Water District	3A Treatment Plant	No	No
Santa Margarita Water District	Estimated	2,072	SOCWA	J.B. Latham Treatment Plant	No	
Santa Margarita Water District	Estimated	784	IRWD	Los Alisos Water Recycling Plant	No	No
Santa Margarita Water District	Metered	6,853	Santa Margarita Water District	Chiquita Water Reclamation Plant	Yes	No
Total Wastewater Collected from Service Area in 2015:		11,335				
NOTES: OCWRP and CWRP flows are from operational data from FY 2014-15. J.B. Latham flow is based on a flow monitoring survey performed in 2013. Los Alisos flows are based on the agreement the District has with IRWD. The OCWRP discharges its solids into the sewer that are treated at J.B. Latham. Volume estimates are recorded in MGD and converted to AFY.						

Table 6-2: Wastewater Treatment and Discharge within Service Area in 2015

Retail: Wastewater Treatment and Discharge within Service Area in 2015									
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2015 volumes (AF)			
						Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
Oso Creek Water Reclamation Plant	San Juan Creek Ocean Outfall	Dana Point / Laguna Beach	Solids discharge into trunk line	No	Tertiary	1,896	241	1,655	0
Chiquita Water Reclamation Plant	San Juan Creek Ocean Outfall	Dana Point / Laguna Beach	Ocean outfall	Yes	Tertiary	6,583	2,344	4,239	0
					Total	8,479	2,585	5,894	0
NOTES: Volumes are estimates from SMWD operation records									

6.3 Current Recycled Water Uses

The District operates a recycled water distribution system that consists of two seasonal storage reservoirs, urban runoff collection, and the ability to purchase recycled water from neighboring agencies. The District's recycled water program provides an alternative, local water supply that allows the service area to be less dependent on imported water. Recycled water within the District's service area is primarily used for irrigation and construction purposes. The recycled water is delivered to parks, medians, slopes, golf courses, and schools throughout Mission Viejo, Coto de Caza, Ladera Ranch, Sendero, Esencia, Las Flores, Wagon Wheel, and Talega with plans to expand this service into the City of Rancho Santa Margarita. In FY 2014-15, the District used approximately 7,495 AFY of recycled water within their service area. The District's recycled water demand is expected to increase significantly by 2020 and gradually increase through 2035 as shown in Table 6-3.

6.3.1 Recycled Water Service Areas

The District's recycled water system is interconnected which allows the District the ability to transfer recycled water from any of the sources to any of the uses. In order to be more operationally efficient, the District typically delivers water to the demands from the nearest sources. The District has two fundamental source/demand areas: Oso Creek and Chiquita.

Oso Creek Service Area

The Oso Creek area primarily serves the City of Mission Viejo.

Oso Creek Water Reclamation Plant

The OCWRP, constructed in 1978 and upgraded in 1989, 2004, and 2007, is owned and operated by the District. The plant produces up to 3 MGD of tertiary treated water.

Oso Creek Barrier

The Oso Creek Barrier and pump station intercept Oso Creek flow in order to protect the downstream San Juan Basin groundwater from degradation. The Oso Barrier serves to restrict the high TDS flows from Oso Creek from running into the San Juan Basin. Intercepted stream flow is pumped to the air gap/blending structure at the OCWRP and subsequently pumped into the nondomestic distribution system. The project is designed to recover up to 1 MGD.

Upper Oso Reservoir

The Upper Oso Reservoir, located near the 241 Toll Road, has been operational since 1979. The uncovered reservoir serves as seasonal storage for recycled water produced during low demand periods and to supplement supplied during high demand periods. The District conveys flows to the reservoir where along with MNWD owns 326 MG of capacity and while the remaining 987 MG is owned by the District. The recycled water and urban runoff stored in the reservoir is used for landscape irrigation in the surrounding communities such as golf courses, major slopes, parks, and school grounds.

Chiquita Service Area

The Chiquita area serves Talega, Coto de Caza, Sendero, Esencia, and Ladera Ranch.

Chiquita Water Reclamation Plant

The CWRP is owned and operated by the District with its most recent expansion completed in 2005. The CWRP has a secondary treatment capacity of 9 MGD where the District owns 7.8 MGD of capacity, 0.64 MGD is owned by IRWD, and the remaining 0.56 MGD is owned by TCWD. Tertiary treatment capacity at the CWRP is 6 MGD.

The District is planning to expand the CWRP tertiary capacity from 6 MGD to 10 MGD by 2018. The expansion would continue to reduce the District's dependency on imported water and provide additional recycled water for irrigation purposes.

Canada Gobernadora Multipurpose Basin

The Canada Gobernadora Multipurpose Basin project is located in the unincorporated portion of southeastern Orange County, south of the Coto de Caza community. The basin captures urban runoff and storm flows and naturally treats it to meet irrigation demands in nearby communities. The basin prevents downstream erosion and sedimentation in the Gobernadora Creek and improves water quality. Approximately 350 to 750 AF is expected to be captured in the basin each year.

The basin provides storm detention and a natural treatment system that captures and diverts flows through wetlands, a pump station, and to a pipeline that delivers flows to the Portola reservoir in Coto de Caza, providing non-potable water storage. The Gobernadora transmission system will also connect the CWRP to the Portola Reservoir for additional recycled water storage.

Los Alisos Water Recycling Plant

The District entered into the Agreement with IRWD to interconnect the two Districts' non-potable water systems so the District can purchase recycled water from the Los Alisos Water Recycling Plant, owned and operated by IRWD. Recycled water from the plant is pumped to the Upper Oso Reservoir for seasonal storage through an interconnection in Mission Viejo. The District can purchase up to 1,500 AFY from IRWD and the supply is expected to be available through 2030. Additional recycled water can be purchased on an as-available basis.

Dove Canyon Water Recovery Project

The Dove Canyon Conservation and Water Recovery Project is an innovative diversion project that helps keeps urban runoff from reaching the natural habitat in Starr Ranch Sanctuary.

In operation since 2007, this project is in partnership with TCWD and Audubon Starr Ranch Sanctuary. Each year, runoff water from Dove Canyon is diverted from Starr Ranch to SMWD's Portola Reservoir and TCWD's Dove Lake, both of which hold recycled water. The project allows both water districts to gain about 200 AF annually of recycled water, freeing up an equal amount of domestic water for customers to use.

Before the project was implemented, delicate habitat along Bell Creek, located within the 4,000 acre Starr Ranch, had been disrupted by the invasion of non-native species due to year-round water runoff from Dove Canyon. Today, the project is helping protect and restore this pristine area for future generations.

Horno Water Quality Basin Urban Runoff Recovery Project

The Horno Water Quality Basin Urban Runoff Recovery Project is built on the southern side of the Ladera Ranch community on the Horno Creek. The basin is designed to provide two functions. The first is to mitigate storm flows with a retention basin, so storm flows to the downstream community in the City of San Juan Capistrano do not exceed pre-development levels. The second is to divert low flows through constructed wetlands for natural treatment prior to recovering the runoff and pumping into the District's recycled water system for beneficial reuse. The project is designed to recover up to 180 AFY.

Table 6-3: Current and Projected Recycled Water Direct Beneficial Use within Service Area (AF)

Retail: Current and Projected Recycled Water Direct Beneficial Uses within Service Area								
Name of Agency Producing (Treating) the Recycled Water:		SMWD						
Name of Agency Operating the Recycled Water Distribution System:		SMWD						
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment	2015	2020	2025	2030	2035	2040
Agricultural irrigation								
Landscape irrigation (excludes golf courses)	Parks, Schools, and greenbelts	Tertiary	5,866	8,925	9,411	9,930	9,765	9,765
Golf course irrigation	Golf courses	Tertiary	1,186	1,200	1,200	1,200	1,200	1,200
Commercial use	Lakefill	Tertiary	0	300	300	300	300	300
Industrial use	Construction/ Grading	Tertiary	258	260	300	200	200	50
Geothermal and other energy production								
Seawater intrusion barrier								
Recreational impoundment								
Wetlands or wildlife habitat								
Groundwater recharge (IPR)								
Surface water augmentation (IPR)								
Direct potable reuse								
Other *(Provide General Description)*	District usage	Tertiary	185	200	200	200	200	200
		Total:	7,495	10,885	11,411	11,830	11,665	11,515
NOTES: Volumes estimated based on historical usage and future development projections. The District is pursuing IPR as a potential source projecting up to 2,000 AF in 2020 and increasing up to 5,000 AF as shown in Table 3-3.								

The projected 2015 recycled water use from the District's 2010 UWMP was compared to the 2015 actual recycled water use as shown in Table 6-4. Recycled water for 2015 was closely projected in the 2010 UWMP compared to the actual recycled water use in 2015.

Table 6-4: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual (AF)

Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual			
Use Type		2010 Projection for 2015	2015 actual use
Agricultural irrigation			
Landscape irrigation (excludes golf courses)		7,439	5,866
Golf course irrigation			1,186
Commercial use			
Industrial use			258
Geothermal and other energy production			
Seawater intrusion barrier			
Recreational impoundment			
Wetlands or wildlife habitat			
Groundwater recharge (IPR)			
Surface water augmentation (IPR)			
Direct potable reuse			
Other	District Usage		185
	Total	7,439	7,495
NOTES: 2015 volumes estimated from District's billing database. DWR did not require recycled water breakdown for golf course irrigation in 2010 UWMP.			

6.4 Potential Recycled Water Uses

The District is actively working on sites to convert to recycled water to offset imported water demands in Coto de Caza, Mission Viejo, and Rancho Santa Margarita (Santa Margarita Water District, Comprehensive Annual Financial Report Fiscal Year Ended June 30, 2015). Current recycled water projects are described below.

Califia Recycled Water Conversion Project – Expansion of the recycled water distribution system to increase recycled water use in the Califia area of the City of Mission Viejo is scheduled to be completed in July 2016. The system will consist of approximately 4.5 miles of 1-inch to 8-inch diameter pipeline to deliver 220 AFY for irrigation use as shown on Figure 6-1 (Santa Margarita Water District, Final Initial Study and Mitigated Negative Declaration for Califia Recycled Water Project, June 2015). The Califia HOA Recycled Water Conversion Project will reduce dependence on imported water, reduce the amount of treated wastewater discharged to the ocean, and enhance overall supply reliability (Santa Margarita Water District, Califia Recycled Water Conversion Project, December 2014).

Miscellaneous Conversion Projects - A pipeline to serve the communities of Coto de Caza and Palmia are in design. The total expected recycled water demand for the Califia, Coto de Caza, and Palmia conversion projects is 800-1200 AFY.



Figure 6-1: Proposed Califia Recycled Water System

Rancho Santa Margarita Recycle Conversion – The District is planning recycled water conversions in the City of Rancho Santa Margarita with an estimated budget of $13 million to provide approximately 1,000 AFY of recycled water. All of these conversions will provide recycled water for landscape irrigation (Santa Margarita Water District, Comprehensive Annual Financial Report Fiscal Year Ended June 30, 2015).

Trampas Canyon - The Trampas reservoir, located south of Ortega Highway, is an existing reservoir constructed between 1973 and 1975 that is currently being used as a tailing retention facility for a quarry. The District is preparing plans to rebuild the dam and increase the reservoir capacity to 5,000 AF (Santa Margarita Water District, Final Initial Study and Mitigated Negative Declaration for Califia Recycled Water Project, June 2015). The reservoir will be used to store recycled water from the CWRP approximately 1.5 miles north of the reservoir site and will allow for expansion of the District's recycled water system.

Chiquita Water Reclamation Plant Expansion – The District plans to expand the existing CWRP tertiary treatment capacity from 6 MGD to 10 MGD by 2018 to increase the total production of recycled water for landscape irrigation to meet projected demands from development. Expansion will be required of the following: blowers, SCADA and communication systems, odor control, influent pump station and force main, grit dewatering, and the chlorine contact basin.

3A Treatment Plant Expansion - The 3A Treatment Plant Tertiary Expansion Project will provide an additional 3,000 AFY of capacity for recycled water use. The expansion includes the following components: increase the reliability of the aeration system, expand and/or replacing the existing filters with more effective tertiary filters, expand the disinfection system, expand the tertiary effluent pumps, possible upsizing of the discharge pipeline where it connects to the District's recycled water distribution system, modification to various in-plant piping and electrical systems, and addition of a standby generator to maintain operation during a power outage. The expansion will increase the local water supply reliability by producing an additional 3,000 AFY of recycled water, reducing dependence on imported water.

6.4.1 Direct Non-Potable Reuse

The District currently uses water from its recycled water system for direct non-potable reuse such as landscape irrigation.

6.4.2 Indirect Potable Reuse

SBJA and the District are determining the optimal approach to using the San Juan Groundwater Basin. This includes the possibility of implementing an indirect potable reuse project which is described in further detail in Section 7.3.

6.5 Optimization Plan

In Orange County, the majority of recycled water is used for irrigating golf courses, parks, schools, businesses, and communal landscaping, as well as for groundwater recharge. Future recycled water use can be increased by requiring dual piping in new developments, retrofitting existing landscaped areas and constructing recycled water pump stations and transmission pipelines to reach areas that are further from treatment plants. Gains in implementing some of these projects have been made throughout the county. However, additional costs, large energy requirements, and capital costs for facilities all contribute to the high costs of such projects.

In order to determine if additional projects are feasible, studies must be performed to determine if the project should be pursed. Feasibility studies will include an evaluation of alternatives with a present worth analysis consisting of capital costs (design, environmental reviews, construction, etc.) and operations and maintenance costs (electrical costs for pumps and equipment and maintenance required for the system).

The District will continue to conduct feasibility studies for recycled water and seek out creative solutions such as funding, regulatory requirements, institutional arrangement and public acceptance for recycled water use with MWDOC, Metropolitan and other cooperative agencies.

7 FUTURE WATER SUPPLY PROJECTS AND PROGRAMS

7.1 Water Management Tools

With improvements in the water recycling system, along with conservation efforts, the District can optimize its facilities and more effectively meet projected demands.

7.2 Transfer or Exchange Opportunities

The District has actively pursued water supply reliability through water transfers. Water transfers are a reliable and cost effective means to provide supply for specific purposes such as supplementing dry year supplies. The District will continue to pursue water transfers as an alternative water supply and is currently working with MWDOC and other agencies to investigate possible transfers.

The Supplemental Dry Year Agreements are transfer agreements that are triggered under specific conditions when supplies from Metropolitan are limited. The District is currently working with MWDOC, IEUA, Cucamonga Valley Water District (CVWD), and Golden State Water Company (GSWC) to potentially deliver water to the Santa Ana River for infiltration and ultimate extraction through the Orange County Groundwater Basin, subject to agreement with Orange County Water District (OCWD). In dry years, CVWD will deliver up to 4,250 AFY of water and GSWC will deliver up to 2,000 AFY of water to the District.

MWDOC continues to help its retail agencies develop transfer and exchange opportunities that promote reliability within their systems. Therefore, MWDOC will look to help its retail agencies navigate the operational and administrative issues of transfers within the Metropolitan distribution system.

7.3 Planned Water Supply Projects and Programs

The District's planned design and construction projects as described below.

Baker Water Treatment Plant - The Baker Water Treatment Plant is a new drinking water treatment plant in the City of Lake Forest. This plant will have a capacity of 28.1 MGD and is a joint regional project that will increase the local drinking water supply for the District, IRWD, MNWD, ETWD, and TCWD. The plant will treat raw, imported water from Metropolitan and ultimately local surface water from Irvine Lake using advanced microfiltration and ultraviolet (UV) light disinfection, resulting in high quality drinking water that exceeds current regulatory requirements. Metropolitan water from the CRA and SWP, and ultimately local water from Irvine Lake can both be treated independently or as a blend at the plant. Construction is underway and is expected to be completed in October 2016. The District's plant capacity ownership equates to approximately 8.4 MGD if supply is available and capacity fully used as shown on Figure 7-1. A location map of the Baker Treatment Plant and surrounding agencies is provided on Figure 7-2.

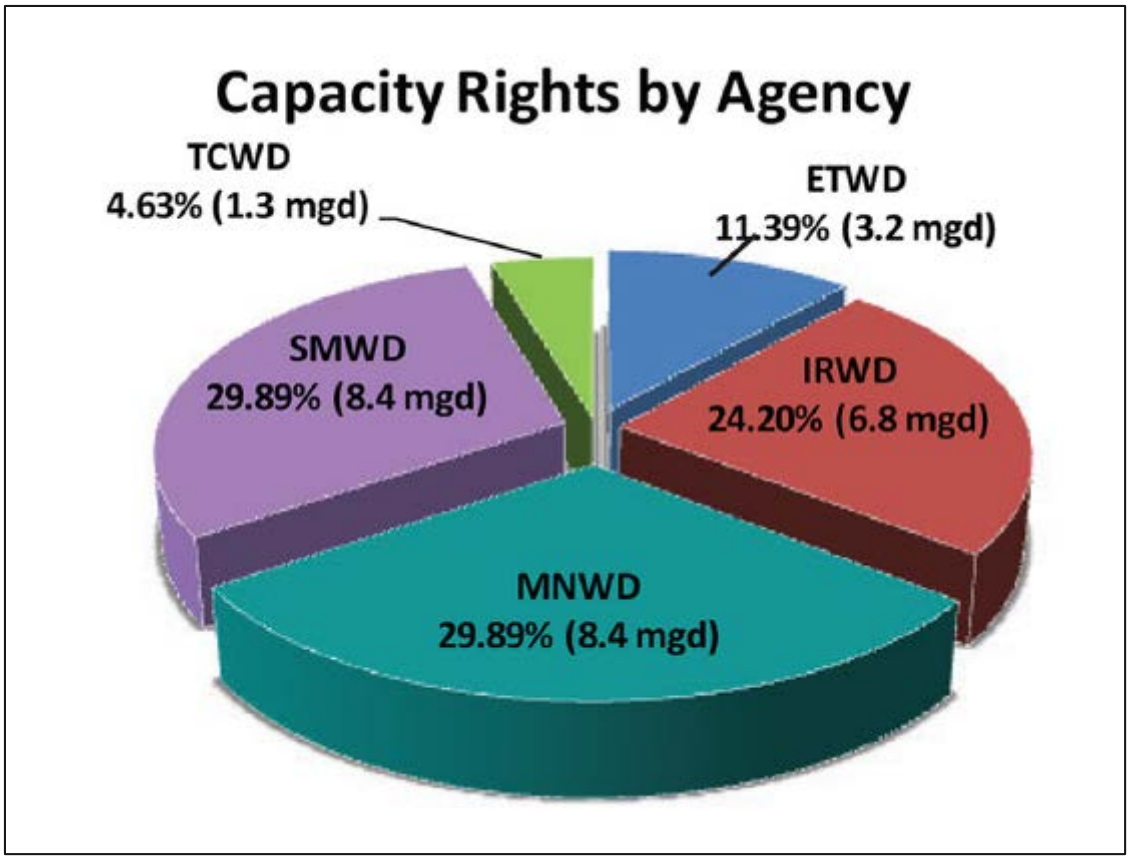


Figure 7-1: Baker WTP Capacity Rights

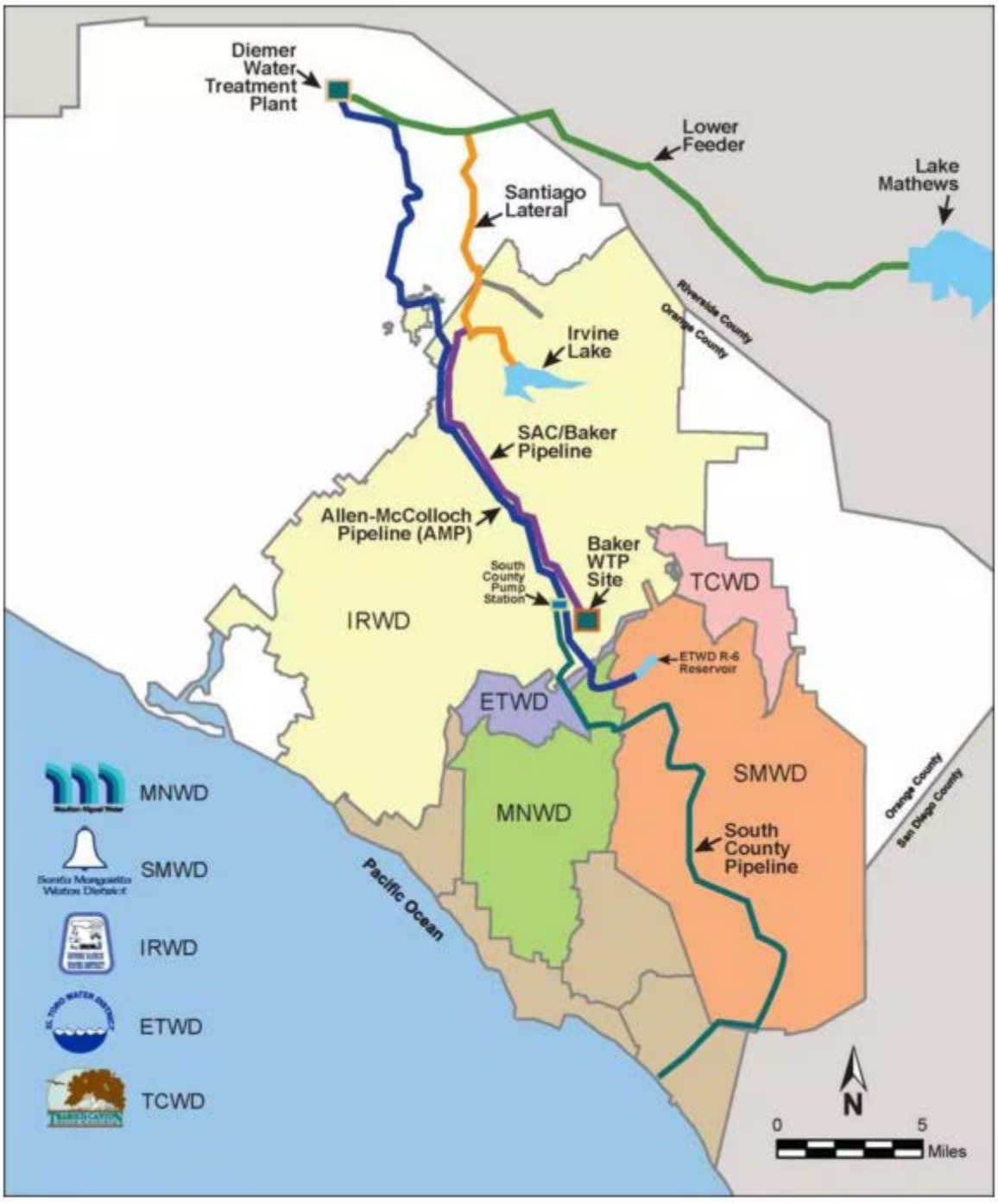


Figure 7-2: Baker WTP Location Map

Rancho Mission Viejo Riparian Non-Potable Water - RMV holds riparian water rights for its ranching, agriculture and tenants uses. RMV and the District have an agreement where RMV will supplement recycled water with non-potable groundwater to areas of The Ranch Plan. The water will be used to supplement the District's recycled water. By 2017, the District will purchase 800 AFY of groundwater from

RMV for non-potable uses. When PA-3 is developed by 2021, the District plans to purchase an additional 400 to 1,200 AFY of groundwater from RMV.

San Juan Basin Recharge – In 2014, SJBA adopted the San Juan Basin Groundwater and Facilities Plan Update that stated it may be possible to recharge the San Juan Basin with a combination of stormflows, urban runoff, and recycled water to maximize the potable water supply. The project would diversify the District's water supply portfolio and reduce reliance on imported water. The San Juan Basin has the ability to produce approximately 10,000 to 14,000 AFY of potable water and the District is considering participating in the project for 5,000 AFY (Santa Margarita Water District, Final Initial Study and Mitigated Negative Declaration for Califia Recycled Water Project, June 2015). The first approach of this project will include installation of rubber dams that will slow stormflows and runoff to promote infiltration and recharge of the San Juan Basin. By 2018, the District plans to pump approximately 1,000 to 2,000 AFY of water, treat it with desalters, and provide as a potable water supply. If the first approach is successful, the recharge program will use recycled water for recharge of the Basin and approximately 5,000 AFY would be extracted by 2027. The Trampas Canyon Reservoir will store the recycled water for recharge.

Advanced Purified Water Project – Construction of a recycled water treatment facility in the City of Mission Viejo will provide additional treatment for the District's disinfected, tertiary effluent and produce advanced purified water to maintain water levels in Lake Mission Viejo. The facility will be owned and operated by the District and has an expected completion in summer 2016.

Lake Mission Viejo is a manmade, recreational lake that also provides emergency firefighting supply. The lake is 125-acres and is subject to water loss through evaporation and subsurface seepage. The lake currently receives water from imported potable water and natural sources, such as precipitation and groundwater.

The Advanced Purified Water (APW) facility will incorporate a collection of treatment processes including ultrafiltration, chemical conditioning, reverse osmosis, and UV disinfection. Effluent will be discharged into Lake Mission Viejo with the remaining effluent distributed in the District's existing recycled water system through additional piping connections. Production capacity of the APW facility is expected to be 600 AFY.

The project may also include construction of a pipeline to connect the APW facility to an existing outfall structure at the toe of the lake's dam. The outfall structure is infrequently used to drain excess water from the lake during wet weather conditions. The pipeline would convey water from the outfall to the Finisterra Pump Station with a lift pump for distribution to the recycled water system.

Cadiz Valley Water Conservation, Recovery and Storage Program – The District is leading the Cadiz Valley Water Conservation, Recovery and Storage Project to provide a potential new, reliable water source to the District and other southern California water agencies by managing a groundwater basin that is part of a 1,300 square miles watershed located in eastern San Bernardino County. The project would manage the aquifer and use water that would otherwise be evaporated from local dry lakes. A future phase of the project could include the ability to store water during wet years from the CRA in the Cadiz Aquifer to be used during dry years. The project is designed to provide 50,000 AFY of potable water on average.

Cadiz, Inc. owns approximately 34,000 acres of land in the Cadiz and Fenner Valleys of the Mojave Desert located in San Bernardino County that is underlain by an extensive aquifer system offering natural

recharge and storage capacity. Cadiz, Inc. and the District entered into a public private partnership to capture and use billions of gallons of groundwater that is currently being evaporated each year when rain and melted snow from the Fenner Valley and Orange Blossom Watersheds reach the local dry lakes. The Cadiz Aquifer can provide approximately 1 MAF of storage capacity that can be used to offset imported water and reduce evaporation at local surface reservoirs.

The project includes construction of a system to capture the aquifer's average annual recharge that would otherwise evaporate from the Bristol and Cadiz Dry Lakes. The project would construct extraction wells on the Cadiz property and a 43-mile buried pipeline within an active railroad right-of-way to convey water to Metropolitan's CRA for delivery to the District and other southern California water agencies. If the region experiences wet weather, the District has the option to decrease or forego its water delivery for that year and carry it over to another year when it may be needed. This carry-over water would be stored in the Cadiz Aquifer.

The project underwent an extensive environmental review for two years and will need additional regulatory approvals from certain public agencies to proceed with design and construction. The District served as the lead agency for the California Environmental Quality Act (CEQA) environmental review to evaluate the potential environmental impacts associated with construction and operation of the project. If alternatives are identified and mitigation measures determined necessary, they must be considered and incorporated prior to approval of the project. The EIR was performed by independent environmental and engineering consultants to conduct studies, obtain public input, and determine the feasibility of the project. The Final EIR was approved on July 31st, 2012.

The District will purchase at least 5,000 AFY of water from the Cadiz Project, which is approximately 20 percent of the District's potable water supply. If implemented, the project would diversify the District's water supply portfolio and provide water supply reliability to ensure its water demands are met regardless of the imported water supply availability.

A Groundwater Monitoring, Management, and Mitigation Plan was developed to ensure the Cadiz project operates as expected and protects desert resources. This plan will actively monitor critical resources in the desert including air, water, natural springs, subsidence, and saline/fresh water movement in the groundwater basin. The goal of the monitoring plan is to provide an early warning of potential impacts that can be addressed before reaching a significant level. Groundwater and surface water resources will be monitored in the watershed and a maximum groundwater draw-down level will be established to ensure the appropriate and safe management of the groundwater basin.

The future projects provided in the Five Year Capital Improvement Program Update included (Santa Margarita Water District, Five Year Capital Improvement Program Update for FY 2014-15, October 2014):

Potable Water:

- Groundwater development from the San Juan Groundwater Basin including additional feasibility studies to optimize the San Juan Basin through adaptive management, stormwater and recycled water recharge and additional extraction wells and treatment.

Recycled Water:

- Recycled water pump station to serve the Sendero/Ladera area.

- Trampas Canyon recycled water seasonal storage reservoir will be constructed to provide 5,000 AF of storage capacity.

Additional future recycled water projects are described in Section 6.4.

7.4 Desalination Opportunities

In 2001, Metropolitan developed a Seawater Desalination Program (SDP) to provide incentives for developing new seawater desalination projects in Metropolitan's service area. In 2014, Metropolitan modified the provisions of their Local Resources Program (LRP) to include incentives for locally produced seawater desalination projects that reduce the need for imported supplies. To qualify for the incentive, proposed projects must replace an existing demand or prevent new demand on Metropolitan's imported water supplies. In return, Metropolitan offers two incentive formulas under the program:

- Up to $340 per AF for 25 years, depending on the unit cost of seawater produced compared to the cost of Metropolitan supplies
- Up to $475 per AF for 15 years, depending on the unit cost of seawater produced compared to the cost of Metropolitan supplies

Developing local supplies within Metropolitan's service area is part of their IRP goal of improving water supply reliability in the region. Creating new local supplies reduce pressure on imported supplies from the SWP and Colorado River.

On May 6, 2015, the SWRCB approved an amendment to the state's Water Quality Control Plan for the Ocean Waters of California (California Ocean Plan) to address effects associated with the construction and operation of seawater desalination facilities (Desalination Amendment). The amendment supports the use of ocean water as a reliable supplement to traditional water supplies while protecting marine life and water quality. The California Ocean Plan now formally acknowledges seawater desalination as a beneficial use of the Pacific Ocean and the Desalination Amendment provides a uniform, consistent process for permitting seawater desalination facilities statewide.

A description of the proposed desalination projects in the region is provided in the following sections. If these projects are developed, Metropolitan's imported water deliveries to Orange County could be reduced.

7.4.1 Groundwater

The District is a member of the SJBA, of which two members operate Groundwater Recovery Facilities (GRF), one owned and operated by the City of San Juan Capistrano and the other in Dana Point that is owned and operated by SCWD to treat brackish groundwater through desalination.

7.4.2 Ocean Water

Huntington Beach Seawater Desalination Project – Poseidon Resources LLC (Poseidon), a private company, is developing the Huntington Beach Seawater Desalination Project to be co-located at the AES Power Plant in the City of Huntington Beach along Pacific Coast Highway and Newland Street. The

proposed project would produce up to 50 MGD (56,000 AFY) of drinking water to provide approximately 10 percent of Orange County's water supply needs.

Over the past several years, Poseidon has been working with OCWD on the general terms and conditions for selling the water to OCWD. OCWD and MWDOC have proposed a few distribution options to agencies in Orange County. The northern option proposes the water be distributed to the northern agencies closer to the plant within OCWD's service area with the possibility of recharging/injecting a portion of the product water into the OC Groundwater Basin. The southern option builds on the northern option by delivering a portion of the product water through the existing OC-44 pipeline for conveyance to the south Orange County water agencies. A third option is also being explored that includes all of the product water to be recharged into the OC Groundwater Basin. Currently, a combination of these options could be pursued.

OCWD's current Long-Term Facilities Plan (LTFP) identifies the Huntington Beach Seawater Desalination project as a priority project and determined the plant capacity of 56,000 AFY as the single largest source of new, local drinking water available to the region. In addition to offsetting imported demand, water from this project could provide OCWD with management flexibility in the OC Groundwater Basin by augmenting supplies into the Talbert Seawater Barrier to prevent seawater intrusion.

In May 2015, OCWD and Poseidon entered into a Term Sheet that provided the overall partner structure in order to advance the project. Based on the initial Term Sheet, Poseidon would be responsible for permitting, financing, design, construction, and operations of the treatment plant while OCWD would purchase the production volume, assuming the product water quality and quantity meet specific contract parameters and criteria. Furthermore, OCWD would then distribute the water in Orange County using one of the proposed distribution options described above.

Currently, the project is in the late-stages of the regulatory permit approval process and Poseidon hopes to obtain the last discretionary permit necessary to construct the plant from the California Coastal Commission (CCC) in 2016. If the CCC permit is obtained, the plant could be operational as early as 2019. The District has entered into a non-binding letter of intent to purchase 5,000 AFY of water from the Huntington Beach Desalination Project.

Doheny Desalination Project – In 2013, after five years and $6.2 million to investigate use of a slant well intake for the Doheny Desalination Project, it was concluded the project was feasible and could produce up to 15 MGD (16,800 AFY) of new potable water supplies to five participating agencies. These agencies were: SCWD, City of San Clemente, City of San Juan Capistrano, Laguna Beach County Water District (LBCWD) and MNWD.

Only SCWD expressed interest in moving forward after work was completed, with the other agencies electing to monitor the work and consider options to subsequently come back into the project while considering other water supply investments.

SCWD has taken the lead on the desalination project and has hired a consulting team to proceed with project development for the Doheny Desalination Project. Major items scheduled over the next year include:

- Preliminary Design Report and Cost Estimate
- Brine Outfall Analysis
- EIR Process

- Environmental Permitting Approvals
- Public Outreach
- Project Funding
- Project Delivery Method
- Economic Analysis

The schedule for this project includes start-up and operation of up to a 5 MGD (5,600 AFY) facility by the end of 2019. SCWD anticipates leaving the option open for other agencies to participate in a larger, 15 MGD facility, with subsequent permitting and construction of additional slant wells and treatment capacity.

Camp Pendleton Seawater Desalination Project – San Diego County Water Authority (SDCWA) is studying a desalination project to be located at the southwest corner of Camp Pendleton Marine Corps Base adjacent to the Santa Margarita River. The initial project would be a 50 (56,000 AFY) or 100 (112,100 AFY) MGD plant with expansions in 50 MGD increments to a maximum capacity of 150 MGD (168,100 AFY), making this the largest proposed desalination plant in the US.

The project is currently in the feasibility study stage and SDCWA is conducting geological surveys, analyzing intake options, and studying the effect on ocean life and routes to bring desalinated water to SDCWA's delivery system. MWDOC and south Orange County agencies are maintaining an interest in the project.

8 UWMP ADOPTION PROCESS

Recognizing that close coordination among other relevant public agencies is key to the success of its UWMP, the District worked closely with other entities such as MWDOC to develop and update this planning document. The District also encouraged public involvement by holding a public hearing on June 1, 2016 for residents to learn and ask questions about their water supply.

This section provides the information required in Article 3 of the Water Code related to adoption and implementation of the UWMP. Table 8-1 summarizes external coordination and outreach activities carried out by the District and their corresponding dates. The UWMP checklist to confirm compliance with the Water Code is provided in Appendix A.

Table 8-1: External Coordination and Outreach

External Coordination and Outreach	Date	Reference
Encouraged public involvement	5/18/16 & 5/25/16	Appendix E
Notified city or county within supplier's service area that water supplier is preparing an updated UWMP (at least 60 days prior to public hearing)	3/18/16	Appendix E
Held public hearing	6/1/16	Appendix E
Adopted UWMP	6/1/16	Appendix F
Submitted UWMP to DWR	7/1/16	-
Submitted UWMP to the California State Library and city or county within the supplier's service area	7/1/16	-
Made UWMP available for public review	8/1/16	-

This UWMP was adopted by the Board of Directors on June 1, 2016. A copy of the adopted resolution is provided in Appendix F.

A change from the 2004 legislative session to the 2009 legislative session required the District to notify any city or county within its service area at least 60 days prior to the public hearing. As shown in Table 8-2, the District sent a Letter of Notification to the County of Orange and cities within its service area on March 18, 2016 to state that it was in the process of preparing an updated UWMP (Appendix E).

Table 8-2: Notification to Cities and Counties

Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
Mission Viejo	☑	☑
Rancho Santa Margarita	☑	☑
San Clemente	☑	☑
San Juan Capistrano	☑	☑
County Name	60 Day Notice	Notice of Public Hearing
Orange County	☑	☑
NOTES:		

8.1 Public Participation

The District encouraged community and public interest involvement in the plan update through public hearings and inspection of the draft document. Public hearing notifications were posted on the District's website, www.smwd.com. A copy of the published Notice of Public Hearing is included in Appendix E. The hearing provided an opportunity for all residents and employees in the service area to learn and ask questions about their water supply in addition to the District's plans for providing a reliable, safe, high-quality water supply. Copies of the draft plan were made available for public inspection at the District's main office and its website. Public hearings were held on June 1, 2016 for plan discussion, review, and adoption.

8.2 Agency Coordination

The District's water supply planning relates to the policies, rules, and regulations of its regional and local water providers. The District is dependent on imported water from Metropolitan through MWDOC, its regional wholesaler.

As the District is a member agency of MWDOC, MWDOC provided assistance to the District's 2015 UWMP development by providing a portion of the data and analysis such as population projections, demand projections, and SBx7-7 modeling. The District's UWMP was developed in collaboration with MWDOC's 2015 RUWMP to ensure consistency between the two documents as well as Metropolitan's 2015 RUWMP and 2015 Integrated Water Resources Plan.

8.3 UWMP Submittal

8.3.1 Review of 2010 UWMP Implementation

As required by California Water Code, the District summarizes the implementation of the Water Conservation Programs to date, and compares the implementation to those as planned in its 2010 UWMP.

Comparison of 2010 Planned Water Conservation Programs with 2015 Actual Programs

As a signatory to the MOU regarding urban water use efficiency, the District's commitment to implement Best Management Practice (BMP)-based water use efficiency program continues today. For the District's specific achievements in the area of conservation, please see Section 4 of this Plan.

Comparison of 2010 Projected Recycled Water Use with 2015 Actual Use

Current recycled water projections for the District in 2015 are about 19 percent less than previously forecasted for 2015 in the 2010 UWMP, as illustrated in Table 6-4.

8.3.2 Filing of 2015 UWMP

The Board of Directors reviewed the Final Draft Plan on June 1, 2016. The five-member Board of Directors approved the 2015 UWMP on June 1, 2016. See Appendix F for the resolution approving the Plan.

By July 1, 2016, the District's Adopted 2015 UWMP was filed with DWR, California State Library, County of Orange, and cities within its service area.

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Urban Water Management Planning Act, California Water Code § 10610-10656 (2010).

Water Conservation Act of 2009, California Senate SB x7-7, 7th California Congress (2009).

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APPENDIX A

UWMP Checklist

UWMP Checklist

This checklist is developed directly from the Urban Water Management Planning Act and SB X7-7. It is provided to support water suppliers during preparation of their UWMPs. Two versions of the UWMP Checklist are provided – the first one is organized according to the California Water Code and the second checklist according to subject matter. The two checklists contain duplicate information and the water supplier should use whichever checklist is more convenient. In the event that information or recommendations in these tables are inconsistent with, conflict with, or omit the requirements of the Act or applicable laws, the Act or other laws shall prevail.

Each water supplier submitting an UWMP can also provide DWR with the UWMP location of the required element by completing the last column of eitherchecklist. This will support DWR in its review of these UWMPs. The completed form can be included with the UWMP.

If an item does not pertain to a water supplier, then state the UWMP requirement and note that it does not apply to the agency. For example, if a water supplier does not use groundwater as a water supply source, then there should be a statement in the UWMP that groundwater is not a water supply source.

Checklist Arranged by Subject

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location *(Optional Column for Agency Use)*
10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Section 2.1	**Section 1.1**
10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Section 2.5.2	**Section 8.2**
10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	Plan Preparation	Section 2.5.2	**Section 8.1**
10631(a)	Describe the water supplier service area.	System Description	Section 3.1	**Section 1.3.1**
10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3	**Section 2.2.1**
10631(a)	Provide population projections for 2020, 2025, 2030, and 2035.	System Description	Section 3.4	**Section 2.2.2**
10631(a)	Describe other demographic factors affecting the supplier's water management planning.	System Description	Section 3.4	**Section 2.3**
10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Sections 3.4 and 5.4	**Section 2.2.2**
10631(e)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2	**Section 2.3.1 and 2.4.3**
10631(e)(3)(A)	Report the distribution system water loss for the most recent 12-month period available.	System Water Use	Section 4.3	**Section 2.3.3 and Appendix G**
10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.5	**Section 2.4.5**
10608.20(b)	Retail suppliers shall adopt a 2020 water use target using one of four methods.	Baselines and Targets	Section 5.7 and App E	**Section 2.5.2.1**
10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and	Baselines and Targets	Chapter 5 and App E	**Section 2.5.2.2**

	compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.			
10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.7.2	**Section 2.5.2.2**
10608.24(a)	Retail suppliers shall meet their interim target by December 31, 2015.	Baselines and Targets	Section 5.8 and App E	**Section 2.5.2.2**
10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Section 5.8.2	**N/A**
10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	Section 5.1	**N/A**
10608.40	Retail suppliers shall report on their progress in meeting their water use targets. The data shall be reported using a standardized form.	Baselines and Targets	Section 5.8 and App E	**Section 2.5.2.2**
10631(b)	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030, and 2035.	System Supplies	Chapter 6	**Section 3.4**
10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2	**Section 3.3**
10631(b)(1)	Indicate whether a groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Section 6.2.2	**Section 3.3.1 & Appendix C**
10631(b)(2)	Describe the groundwater basin.	System Supplies	Section 6.2.1	**Section 3.3.1**
10631(b)(2)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 6.2.2	**Section 3.3.1**
10631(b)(2)	For unadjudicated basins, indicate whether or not the department has identified the basin as overdrafted, or projected to become overdrafted. Describe efforts by the supplier to eliminate the long-term overdraft condition.	System Supplies	Section 6.2.3	**N/A**
10631(b)(3)	Provide a detailed description and analysis of the location, amount, and sufficiency of	System Supplies	Section 6.2.4	**Section 3.3.2**

	groundwater pumped by the urban water supplier for the past five years			
10631(b)(4)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Sections 6.2 and 6.9	**Section 3.4 & Table 3-3**
10631(d)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 6.7	**Section 7.2**
10631(g)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years.	System Supplies	Section 6.8	**Section 7**
10631(h)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.6	**Section 7.4**
10631(j)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) – if any - with water use projections from that source.	System Supplies	Section 2.5.1	**Section 3.4 & Table 1-4**
10631(j)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Section 2.5.1	**N/A**
10633	For wastewater and recycled water, coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.1	**Section 6.1**
10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area. Include quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	System Supplies (Recycled Water)	Section 6.5.2	**Section 6.2**
10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Section 6.5.2.2	**Section 6.2**
10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.3 and 6.5.4	**Section 6.3**
10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.5.4	**Section 6.4**
10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in	System Supplies (Recycled Water)	Section 6.5.4	**Section 6.3**

	comparison to uses previously projected.			
10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	Section 6.5.5	**Section 6.4**
10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.5	**Section 6.5**
10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 7.4	**Section 7.1**
10631(c)(1)	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage.	Water Supply Reliability Assessment	Section 7.1	**Section 3.6**
10631(c)(1)	Provide data for an average water year, a single dry water year, and multiple dry water years	Water Supply Reliability Assessment	Section 7.2	**Section 3.6.5**
10631(c)(2)	For any water source that may not be available at a consistent level of use, describe plans to supplement or replace that source.	Water Supply Reliability Assessment	Section 7.1	**Section 3.6**
10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 7.1	**Section 3.6.2.3**
10635(a)	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.3	**Section 3.6**
10632(a) and 10632(a)(1)	Provide an urban water shortage contingency analysis that specifies stages of action and an outline of specific water supply conditions at each stage.	Water Shortage Contingency Planning	Section 8.1	**Section 5.2**
10632(a)(2)	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency.	Water Shortage Contingency Planning	Section 8.9	**Section 5.3**
10632(a)(3)	Identify actions to be undertaken by the urban water supplier in case of a catastrophic interruption of water supplies.	Water Shortage Contingency Planning	Section 8.8	**Section 5.4**
10632(a)(4)	Identify mandatory prohibitions against specific water use practices during water shortages.	Water Shortage Contingency Planning	Section 8.2	**Section 5.5.1**
10632(a)(5)	Specify consumption reduction methods in the most restrictive stages.	Water Shortage Contingency Planning	Section 8.4	**Section 5.5.3**
10632(a)(6)	Indicated penalties or charges for excessive	Water Shortage Contingency	Section 8.3	**Section**

	use, where applicable.	Planning		**5.5.2**
10632(a)(7)	Provide an analysis of the impacts of each of the actions and conditions in the water shortage contingency analysis on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts.	Water Shortage Contingency Planning	Section 8.6	**Section 5.6**
10632(a)(8)	Provide a draft water shortage contingency resolution or ordappeninance.	Water Shortage Contingency Planning	Section 8.7	**Appendix D**
10632(a)(9)	Indicate a mechanism for determining actual reductions in water use pursuant to the water shortage contingency analysis.	Water Shortage Contingency Planning	Section 8.5	**Section 5.7**
10631(f)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Sections 9.2 and 9.3	**Section 4**
10631(f)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	Sections 9.1 and 9.3	**N/A**
10631(i)	CUWCC members may submit their 2013-2014 CUWCC BMP annual reports in lieu of, or in addition to, describing the DMM implementation in their UWMPs. This option is only allowable if the supplier has been found to be in full compliance with the CUWCC MOU.	Demand Management Measures	Section 9.5	**Section 4**
10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets.	Plan Adoption, Submittal, and Implementation	Section 10.3	**Section 8.1**
10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.	Plan Adoption, Submittal, and Implementation	Section 10.2.1	**Appendix E**
10621(d)	Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.	Plan Adoption, Submittal, and Implementation	Sections 10.3.1 and 10.4	**Section 8.3.2**
10635(b)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 60 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	**Section 8.3.2**
10642	Provide supporting documentation that the urban water supplier made the plan available for public inspection, published notice of the	Plan Adoption, Submittal, and Implementation	Sections 10.2.2, 10.3, and 10.5	**Section 8.1**

	public hearing, and held a public hearing about the plan.			
10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Sections 10.2.1	**Appendix E**
10642	Provide supporting documentation that the plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.1	**Appendix F**
10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4.3	**Section 8.3.2**
10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	**Section 8.3.2**
10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Sections 10.4.1 and 10.4.2	**Section 8.3.2**
10645	**Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.**	**Plan Adoption, Submittal, and Implementation**	**Section 10.5**	**Section 8**

APPENDIX B

Standardized Tables

F

Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
CA3010101	Santa Margarita Water District	54,907	34,405
	TOTAL	54,907	34,405
NOTES: Customer Relations as of March 2016			

Table 2-2: Plan Identification			
Select Only One	**Type of Plan**		**Name of RUWMP or Regional Alliance** *if applicable* *drop down list*
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☑	Water Supplier is also a member of a Regional Alliance	Orange County 20x2020 Regional Alliance
☐	**Regional Urban Water Management Plan (RUWMP)**		
NOTES:			

Table 2-3: Agency Identification	
Type of Agency (select one or both)	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year (select one)	
☐	UWMP Tables Are in Calendar Years
☑	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Date that the Fiscal Year Begins (mm/dd)	
07/01	
Units of Measure Used in UWMP (select from Drop down)	
Unit	AF
NOTES:	

Table 2-4 Retail: Water Supplier Information Exchange
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
MWDOC
NOTES:

Table 3-1 Retail: Population - Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040
	156,949	169,628	187,826	194,951	199,028	200,026
NOTES: Source: Center for Demographic Research						

Table 4-1 Retail: Demands for Potable Water - Actual			
Use Type *(Add additional rows as needed)*	2015 Actual		
Drop down list *May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool*	Additional Description *(as needed)*	Level of Treatment When Delivered *Drop down list*	Volume
Single Family		Drinking Water	16,033
Multi-Family		Drinking Water	2,619
Commercial		Drinking Water	1,020
Landscape		Drinking Water	5,696
Other	Alternative Sourced	Drinking Water	638
Losses		Drinking Water	1,123
Sales/Transfers/Exchanges to other agencies	TCWD	Drinking Water	-218
		TOTAL	26,910
NOTES: Volumes are pulled from the District's billing database. Losses are calculated as 4 percent of the imported volume (See Section 2.3.5)			

Table 4-2 Retail: Demands for Potable Water - Projected					
Use Type *(Add additional rows as needed)*	Projected Water Use *Report To the Extent that Records are Available*				
Drop down list *May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool*	2020	2025	2030	2035	2040
Single Family	15,597	15,710	15,357	14,595	14,595
Multi-Family	2,547	2,566	2,509	2,384	2,384
Commercial	992	999	977	928	928
Landscape	5,540	5,581	5,456	5,185	5,185
Other	620	625	611	581	581
Losses	1,092	1,100	1,076	1,022	1,022
TOTAL	26,388	26,581	25,986	24,695	24,695
NOTES: Santa Margarita Water District Demand Forecast, M.Cubed, January 2016. Losses are calculated as 4 percent of imported water volume. Data for 2040 extrapolated.					

Table 4-3 Retail: Total Water Demands						
	2015	2020	2025	2030	2035	2040
Potable and Raw Water *From Tables 4-1 and 4-2*	26,910	26,388	26,581	25,986	24,695	24,695
Recycled Water Demand *From Table 6-4*	7,495	10,885	11,411	11,830	11,665	11,515
TOTAL WATER DEMAND	34,405	37,273	37,992	37,816	36,360	36,210
NOTES: 2015 volumes are pulled from the District's billing database. Forecast provided by M. Cubed.						

Table 4-4 Retail: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss
07/2013	1,265
NOTES:	

Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) *Drop down list (y/n)*	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc… utilized in demand projections are found.	Section 4.1
Are Lower Income Residential Demands Included In Projections? *Drop down list (y/n)*	Yes
NOTES:	

Table 5-1 Baselines and Targets Summary

Retail Agency or Regional Alliance Only

Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	*1991*	*2005*	*211*	*190*	*169*
5 Year	*2004*	*2008*	*202*		

*All values are in Gallons per Capita per Day (GPCD)

NOTES:

Table 3-2: 2015 Compliance *Retail Agency or Regional Alliance Only**		
Actual 2015 GPCD	2015 Interim Target GPCD	Did Supplier Achieve Targeted Reduction for 2015? Y/N
152	190	Yes
**All values are in Gallons per Capita per*		
NOTES:		

Table 6-1 Retail: Groundwater Volume Pumped	
☑	Supplier does not pump groundwater. The supplier will not complete the table below.

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015						
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? *Drop Down List*	Volume of Wastewater Collected in 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? *Drop Down List*	Is WWTP Operation Contracted to a Third Party? *(optional)* *Drop Down List*
Santa Margarita Water District	Metered	1,896	Santa Margarita Water District	Oso Creek Water Reclamation Plant	Yes	No
Santa Margarita Water District	Metered	0	Santa Margarita Water District	3A Treatment Plant	No	No
Santa Margarita Water District	Estimated	2,072	SOCWA	J.B. Latham Treatment Plant	No	
Santa Margarita Water District	Estimated	784	IRWD	Los Alisos Water Recycling Plant	No	No
Santa Margarita Water District	Metered	6,583	Santa Margarita Water District	Chiquita Water Reclamation Plant	Yes	No
Total Wastewater Collected from Service Area in 2015:		11,335				

NOTES: OCWRP and CWRP flows are from operational data from FY 2014-15. J.B. Latham flow is based on a flow monitoring survey performed in 2013. Los Alisos flows are based on the agreement the District has with IRWD. The OCWRP discharges its solids into the sewer that are treated at J.B. Latham. Volume estimates are recorded in MGD and converted to AFY.

Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2015									
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Method of Disposal *Drop down list*	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level *Drop down list*	2015 volumes			
						Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
Oso Creek Water Reclamation Plant	San Juan Creek Ocean Outfall	Dana Point / Laguna Beach	Other	No	Tertiary	1,896	241	1,655	0
Chiquita Water Reclamation Plant	San Juan Creek Ocean Outfall	Dana Point / Laguna Beach	Ocean outfall	Yes	Tertiary	6,583	2,344	4,239	0
					Total	8,479	2,585	5,894	0
NOTES: Volumes are estimates from SMWD operation records									

Table 6-4 Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area								
Name of Agency Producing (Treating) the Recycled Water:		SMWD						
Name of Agency Operating the Recycled Water Distribution System:		SMWD						
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment *Drop down list*	2015	2020	2025	2030	2035	2040
Agricultural irrigation								
Landscape irrigation (excludes golf courses)	Parks, Schools, and greenbelts	Tertiary	5,866	8,925	9,411	9,930	9,765	9,765
Golf course irrigation	Golf courses	Tertiary	1,186	1,200	1,200	1,200	1,200	1,200
Commercial use	Lakefill	Tertiary	0	300	300	300	300	300
Industrial use	Construction/Grading	Tertiary	258	260	300	200	200	50
Geothermal and other energy production								
Seawater intrusion barrier								
Recreational impoundment								
Wetlands or wildlife habitat								
Groundwater recharge (IPR)								
Surface water augmentation (IPR)								
Direct potable reuse								
Other *(Provide General Description)*	District usage	Tertiary	185	200	200	200	200	200
		Total:	7,495	10,885	11,411	11,830	11,665	11,515
NOTES: Volumes estimated based on historical usage and future development projections. The District is pursuing IPR as a potential source projecting up to 2,000 AF in 2020 and increasing up to 5,000 AF as shown in Table 3-3.								

Table 6-5 Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual			
Use Type		**2010 Projection for 2015**	**2015 Actual Use**
Agricultural irrigation			
Landscape irrigation (excludes golf courses)		7,439	5,866
Golf course irrigation			1,186
Commercial use			
Industrial use			258
Geothermal and other energy production			
Seawater intrusion barrier			
Recreational impoundment			
Wetlands or wildlife habitat			
Groundwater recharge (IPR)			
Surface water augmentation (IPR)			
Direct potable reuse			
Other	District Usage		185
	Total	7,439	7,495
NOTES: 2015 volumes estimated from District's billing database. DWR did not require recycled water breakdown for golf course irrigation in 2010 UWMP.			

Table 6-6 Retail: Methods to Expand Future Recycled Water Use	
☑	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.
Section 6.3	Provide page location of narrative in UWMP

Table 6-7 Retail: Expected Future Water Supply Projects or Programs	
☐	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.
☑	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.
Section 7.3	Provide page location of narrative in the UWMP

Table 6-8 Retail: Water Supplies — Actual			
Water Supply	Additional Detail on Water Supply	2015	
Drop down list *May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*		Actual Volume	Water Quality *Drop Down List*
Groundwater	San Juan Groundwater Basin	0	Drinking Water
Purchased or Imported Water	MWDOC/MET	26,910	Drinking Water
Recycled Water		7,495	Recycled Water
	Total	34,405	
NOTES: Santa Margarita Water District Demand Forecast, M.Cubed, January 2016.			

Table 6-9 Retail: Water Supplies — Projected						
Water Supply	Additional Detail on Water Supply	Projected Water Supply *Report To the Extent Practicable*				
Drop down list *May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*		**2020**	**2025**	**2030**	**2035**	**2040**
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Purchased or Imported Water	MWDOC/MET	11,500	9,700	8,100	6,800	6,800
Purchased or Imported Water	Baker	9,400	9,400	9,400	9,400	9,400
Other	Alternative Sources	5,000	5,000	5,000	5,000	5,000
Transfers	Emergency Source	2,000	2,000	2,000	2,000	2,000
Groundwater	San Juan Basin/IPR	2,000	4,000	5,000	5,000	5,000
Recycled Water	Irrigation purposes	10,885	11,411	11,830	11,665	11,515
Total		40,785	41,511	41,330	39,865	39,715
NOTES: SMWD Demand Forecast, M.Cubed, January 2016.						

Table 7-1 Retail: Basis of Water Year Data			
Year Type	**Base Year** *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000*	**Available Supplies if Year Type Repeats**	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available	**% of Average Supply**
Average Year	2015		100%
Single-Dry Year	2002		104%
Multiple-Dry Years 1st Year	2012		102%
Multiple-Dry Years 2nd Year	2013		104%
Multiple-Dry Years 3rd Year	2014		109%
NOTES: Santa Margarita Water District Demand Forecast, M.Cubed, January 2016.			

Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040
Supply totals (autofill from Table 6-9)	40,785	41,511	41,330	39,865	39,715
Demand totals *(autofill from Table 4-3)*	37,273	37,992	37,816	36,360	36,210
Difference	3,512	3,519	3,514	3,505	3,505
NOTES: SMWD Demand Forecast, M.Cubed, January 2016.					

Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040
Supply totals	40,785	41,511	41,330	39,865	39,715
Demand totals	38,764	39,512	39,329	37,814	37,658
Difference	2,021	1,999	2,001	2,051	2,057
NOTES: SMWD Demand Forecast, M.Cubed, January 2016.					

Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	2040
First year	Supply totals	40,785	41,511	41,330	39,865	39,715
	Demand totals	38,018	38,752	38,572	37,087	36,934
	Difference	2,767	2,759	2,758	2,778	2,781
Second year	Supply totals	40,785	41,511	41,330	39,865	39,715
	Demand totals	38,764	39,512	39,329	37,814	37,658
	Alternative Sourced	2,021	1,999	2,001	2,051	2,057
Third year	Supply totals	40,785	41,511	41,330	39,865	39,715
	Demand totals	40,628	41,411	41,219	39,632	39,469
	Difference	157	100	111	233	246
NOTES: SMWD Demand Forecast, M.Cubed, January 2016.						

Table 8-1 Retail Stages of Water Shortage Contingency Plan		
Stage	Complete Both	
	Percent Supply Reduction[1] *Numerical value as a percent*	Water Supply Condition (*Narrative description)*
1	Up to 10%	Exists when the District encourages customers to voluntarily conserve water.
2	Up to 20%	Exists when the District determines water supply shortage exists and consumer demand reduction necessary to use water efficiently and respond to water conditions.
3	Up to 40%	Exists when the District notifies residents and businesses significant reduction in consumer demand is necessary to maintain sufficient water supplies for public health and safety.
4	Alternative Source	Exists when the District declares severe drought conditions exists and significant reduction in consumer demand necessary to maintain sufficient water supplies for public health and safety.
[1] *One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.*		
NOTES: District Water Conservation Program		

Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? *Drop Down List*
Stage 1	Landscape - Limit landscape irrigation to specific times	Irrigation prohibited between 8:00 a.m. and 6:00 p.m. any day	No
Stage 1	Landscape - Other landscape restriction or prohibition	Irrigation limited to fifteen minutes at most for unattended irrigation systems	No
Stage 1	Landscape - Restrict or prohibit runoff from landscape irrigation	-	No
Stage 1	Other - Prohibit use of potable water for washing hard surfaces	-	No
Stage 1	Alternative Sourced	Correct leaks, breaks, and other malfunctions in seven days after notice	No
Stage 1	Water Features - Restrict water use for decorative water features, such as fountains	Prohibit operating decorative water feature that does not use recirculated water	No
Stage 1	Other water feature or swimming pool restriction	Follow Best Practices for construction and operation of swimming pools	No
Stage 1	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	-	No
Stage 1	CII - Restaurants may only serve water upon request	-	No
Stage 1	CII - Lodging establishment must offer opt out of linen service	-	No
Stage 1	Other	Prohibit installation of single pass cooling systems	No
Stage 1	Other	Prohibit installation of non-re-circulating water systems in new commercial conveyor car wash and commercial laundry operations	No
Stage 1	CII - Commercial kitchens required to use pre-rinse spray valves	-	No
Stage 1	Other	Commercial conveyor car wash systems required to have operational recirculating water systems	No
2	Landscape - Limit landscape irrigation to specific days	Irrigation limited to three days per week on District posted schedule. Irrigation in months of November through March limited to one day per week	Yes

2	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Correct leaks, breaks, and other malfunctions in two days after notice	Yes
2	Other water feature or swimming pool restriction	Prohibit filling man-made lakes or ponds to sustain aquatic life	Yes
2	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Prohibit cleaning vehicles except by use of hand-held bucket or at a commercial car washing facility that uses a recirculating water system	Yes
2	Other water feature or swimming pool restriction	Prohibit refilling of more than one foot of residential swimming pools or outdoor spas with potable water except to protect public health, safety, and welfare	Yes
2	Other water feature or swimming pool restriction	Follow District's Best Practices for swimming pools	Yes
2	Other	Potable water for construction use allowed only in accordance with the provisions of a construction water use permit	Yes
3	Landscape - Limit landscape irrigation to specific days	Irrigation limited to two days per week on District posted schedule. Irrigation in months of November through March is limited to one day per week	Yes
3	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Correct leaks, breaks, and other malfunctions in one day after notice	Yes
3	Other water feature or swimming pool restriction	Lake filling permit required to fill man-made lakes or ponds	Yes
3	Other	No new potable water service provided except with express permission from the District	Yes
3	Other	The District will suspend annexations to its service area	Yes
4	Landscape - Prohibit all landscape irrigation	-	Yes
4	Landscape - Prohibit certain types of landscape irrigation	Prohibit watering for agricultural or commercial nurseries except for livestock watering	Yes
4	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Water use at commercial car washes reduced by 50% except for health, safety, and welfare of the public	Yes
4	Other water feature or swimming pool restriction	Prohibit filling residential swimming pools, spas, ponds, or lakes	Yes
NOTES: All restrictions for stage 2, 3, and 4 are applicable during a Stage 1 Water Conservation period on a voluntary basis			

Table 8-3 Retail Only: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*
1	Other	Stage 1 Voluntary Conservation Measures
2	Other	Stage 2 Drought or Emergency Condition Conservation Measures
3	Other	Stage 3 Serious Drought Condition Conservation Measures
4	Other	Stage 4 Mandatory Conservation Measures
NOTES: District Water Conservation Program		

Table 8-4 Retail: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	29,202	29,202	29,202
NOTES: MWDOC Water Shortage Allocation Model			

Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
Mission Viejo	☑	☑
Rancho Santa Margarita	☑	☑
San Clemente	☑	☑
San Juan Capistrano	☑	☑
County Name *Drop Down List*	60 Day Notice	Notice of Public Hearing
Orange County	☑	☑
NOTES:		

APPENDIX C

Groundwater Management Plan

A copy of the SJBA GWMP can be found at
www.sjbauthority.com

APPENDIX D

District Ordinance

ORDINANCE NO. 2014-10-03

ORDINANCE OF THE BOARD OF DIRECTORS OF THE SANTA MARGARITA WATER DISTRICT, ORANGE COUNTY, CALIFORNIA, ADOPTING A COMPREHENSIVE WATER CONSERVATION PROGRAM

BE IT ORDAINED BY THE Board of Directors of the Santa Margarita Water District (the "District") as follows:

SECTION 1. Declaration of Policy. California Water Code Section 375 et seq. provides public water purveyors with the authority to adopt and enforce a water conservation program to (1) protect the health, safety and welfare of the customers of the District, (2) maximize the beneficial use of the District's water supplies, and (3) ensure that there will be sufficient water supplies to meet the basic needs of human consumption, sanitation and fire protection. The Board of Directors of the District ("Board") hereby establishes this District Comprehensive Water Conservation Program pursuant to California Water Code Section 375 et seq., to reduce the quantity of water used by persons within the jurisdiction of the District for the purpose of conserving the District's water supplies.

SECTION 2. Findings.

a. Southern California is a semi-arid region and is largely dependent upon imported water supplies. A growing population, potential climate change, environmental concerns, and other factors in other parts of the State and western United States, make the region susceptible to potential water supply reliability issues; and

b. The District and South Orange County relies on imported potable water to meet its water demands; and

c. A reliable minimum supply of potable water is essential to the public health, safety and welfare of the people and economy of California; and

d. Wasteful water use practices constitute a potential threat to, and an unacceptable diminution of, the District's water supplies. The prevention of water waste is an economically and environmentally feasible way to help protect, conserve and prevent unacceptable diminution of the District's water supplies; and

e. Careful water management that includes active water conservation measures not only in times of drought, but at all times, is essential to ensure a reliable minimum supply of water to meet current and future water supply needs, and

f. Article X, Section 2 of the California Constitution declares that the general welfare requires that water resources be put to beneficial use, waste or unreasonable use or unreasonable method of use of water be prevented, and conservation of water be fully exercised with a view to the reasonable and beneficial use thereof; and

g. On January 21, 1991, the District adopted a conservation based tiered rate structure for District customers and has periodically updated the tiered rate structure.

h. The District adopted Ordinance 0-91-04-01, adopting a Comprehensive Water Conservation Program on April 15, 1991 establishing a staged water conservation program; in response to the reduction in the District's allocation of water from Metropolitan Water District of Southern California (MWD) and Municipal Water District of Orange County (MWDOC); and

i. The District adopted Ordinance 09-07-02, amending Ordinance 0-91-04-01, on July 10, 2009 to update its water conservation program; and

j. On July 15, 2014, the State Water Resources Control Board approved an emergency regulation to ensure water agencies, their customers, and state residents increase water conservation in urban settings. , and

k. In response, the District on August 6, 2014. The District adopted Ordinance No. 2014-08-02 and rescinded Ordinance 09-07-02 to update its Comprehensive Water Conservation Program;

l. The District adopted Resolution 2014-08-03 Establishing Stage 2, Mandatory Conservation Practice and subsequently determined that additional revisions to the Conservation Program were appropriate.

NOW THEREFORE, this Ordinance contains provisions for a staged water conservation program that will encourage reduced water consumption within the District through conservation, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and maximize the efficient use of water within the District.

SECTION 3. Ordinance enacted to update and revise District's Water Conservation Ordinance. The District's Water Conservation Program Ordinance (as most recently updated and revised by Ordinance No. 2014-08-02) is hereby amended in its entirety and its provisions replaced by the provisions of this Ordinance. The Board's implementation of Stage 2 restrictions (as declared by Resolution No. 2014-08-03) shall remain in effect, pursuant to the terms of this Comprehensive Water Conservation Program Ordinance.[1]

SECTION 4. Application. The provisions of this Ordinance shall apply to all persons, entities, customers, and properties served by the District (hereinafter collectively referred to as "customers"). The provisions of this chapter do not apply to uses of water necessary to protect public health and safety or for essential government services, such as police, fire and other similar emergency services. This Ordinance is intended solely to further the conservation of water. It is not intended to implement any provision of federal, State, or local statutes, ordinances, or regulations relating to protection of water quality or control of drainage; refer to

[1] References in Resolution 2014-08-03 to Section numbers in earlier versions of this Ordinance shall correspond to those Sections as renumbered in this Ordinance.

the local jurisdiction or Regional Water Quality Control Board for information on any stormwater ordinances and stormwater management plans. Provisions of this Ordinance may be used in conjunction with local jurisdictions to meet regional water quality and conservation requirements.

SECTION 5. Authorization. The District's General Manager or his designated representative is hereby authorized and directed to implement the staged water conservation and enforcement provisions of this Ordinance as necessary.

SECTION 6. Definitions. The following words and phrases whenever used in this Ordinance have the meaning defined in this section:

A. "Landscape irrigation system" means an irrigation system with pipes, hoses, spray heads, or sprinkling devices that are operated by hand or through an automated system.

B. "Potable water" means water which is suitable for drinking.

C. "Recycled water" means the reclamation and reuse of non-potable water for beneficial use as defined in Title 22 of the California Code of Regulations.

D. "Single pass cooling systems" means equipment where water is circulated only once to cool equipment before being disposed.

SECTION 7. Permanent Water Conservation Requirements – Prohibition Against Water Waste. As part of the District's "Best Management Practices," the following water conservation requirements are in effect at all times and are permanent. Violations of this section will be considered waste and an unreasonable use of water.

1) Limits on Irrigation Practices.

a) Limits on Watering Hours: Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited between the hours of 8:00 a.m. and 6:00 p.m. on any day, except by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.

b) Limit on Watering Duration: Watering or irrigating of lawn, landscape or other vegetated area with potable water using a landscape irrigation system or a watering device that is not continuously attended is limited to no more than fifteen (15) minutes watering per day per station.

c) Efficient Irrigation Systems: This subsection does not apply to (a) landscape irrigation systems that exclusively use very low-flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour and weather based controllers or stream rotor sprinklers that meet a 70% efficiency standard; or (b) landscape irrigation systems that use recycled water.

d) No Water Flow or Runoff: Watering or irrigating of any lawn, landscape or other vegetated area with any water in a manner that causes or allows water flow or any runoff onto an adjoining property, non-irrigated area, private and public sidewalk, walkway, driveway, street, roadway, parking lot, structure, alley, gutter or ditch is prohibited.

2) No Washing Down Hard or Paved Surfaces: Washing down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys with any water, is prohibited except when necessary to alleviate safety or sanitary hazards, and then only by use of a hand-held bucket or similar container, a low-volume, high-pressure cleaning machine equipped to recycle any water used, or a low-volume high-pressure water broom.

3) Obligation to Fix Leaks, Breaks or Malfunctions: Excessive use, loss or escape of water through breaks, leaks or other malfunctions in the water user's plumbing or distribution system for any period of time after such escape of water should have reasonably been discovered and corrected and in no event more than seven (7) days of receiving notice from the District, is prohibited.

4) Re-circulating Water Required for Water Fountains and Decorative Water Features: Operating and maintaining a water fountain or other decorative water feature that does not use re-circulated water is prohibited.

5) Swimming Pool and Spa Construction and Operations Best Practice: The District will develop and maintain a list of Best Practices that are encouraged to be followed for the construction and operation of water use efficient pools or spa installation. The Best Management Practices will be periodically reviewed and updated, at least annually, by the District's Water Use Efficiency Manager. The Best Practices shall be promulgated at the direction of the General Manager.

6) Limits on Washing Vehicles: Using water to wash or clean a vehicle, including but not limited to any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not is prohibited, except by use of a hand-held bucket or similar container or a hand-held hose equipped with a positive self-closing water shut-off nozzle or device. This subsection does not apply to any commercial car washing facility.

7) Drinking Water Served Upon Request Only: Eating or drinking establishments, including but not limited to a restaurant, hotel, cafe, cafeteria, bar, or other public place where food or drinks are sold, served, or offered for sale, are prohibited from providing drinking water to any person unless expressly requested.

8) Commercial Lodging Establishments Must Provide Guests Option to Decline Daily Linen Services: Hotels, motels and other commercial lodging establishments must provide customers the option of not having towels and linen laundered daily. Commercial lodging establishments must prominently display notice of this option in each bathroom using clear and easily understood language.

9) No Installation of Single Pass Cooling Systems: Installation of single pass cooling systems is prohibited in buildings requesting new water service.

10) No Installation of Non-re-circulating Water Systems in Commercial Car Wash and Laundry Systems: Installation of non-re-circulating water systems is prohibited in new commercial conveyor car wash and new commercial laundry systems.

11) Restaurants Required to Use Water Conserving Dish Wash Spray Valves: Food preparation establishments, such as restaurants or cafes, are prohibited from using non-water conserving dish wash spray valves.

12) Commercial Car Wash Systems: Effective on January 1, 2010, all commercial conveyor car wash systems must have installed operational re-circulating water systems, or must have secured a waiver of this requirement from the District.

SECTION 8. Conservation Stages. In addition to the Permanent Water Conservation Requirements, the District's Comprehensive Water Conservation Program consists of the following four stages.

Conservation Stage	Level of Restriction	Percentage of Projected Savings
Stage 1	Voluntary	Up to 10%
Stage 2	Mandatory	Up to 20%
Stage 3	Mandatory	Up to 40%
Stage 4	Mandatory	Over 40%

Stage 1 shall remain in effect at all times until or unless a mandatory conservation stage is implemented in accordance with the provisions of this Ordinance. The mandatory conservation stages (stages 2, 3 and 4) shall take effect upon implementation by the Board in accordance with Section 9.

A. Stage 1 - Voluntary Conservation. In addition to complying with the Permanent Restrictions in Section 7, District customers are encouraged to voluntarily conserve water during stage 1. District customers are specifically requested to voluntarily implement the mandatory water use restrictions set forth in stages 2, 3 and 4 to the extent feasible. In particular, watering or irrigating of lawn, landscape, agricultural or other vegetated area with potable water is requested to be limited to three days per week. During the months of November through March, watering or irrigating of lawn, landscape or other vegetated area with potable water is recommended to be limited to no more than one day per week. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour and sensor-based controllers or stream rotor sprinklers that meet a 70% efficiency standard or landscape irrigation zones that exclusively use recycled water. This provision also does not apply to watering or irrigating by use of a handheld bucket or similar container, a hand-held

hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.

B. Stage 2 - Mandatory Conservation – Drought or Emergency Conditions. A Stage 2 Mandatory Conservation – Drought Conditions exists when the District determines, in its sole discretion, that due to drought or other water supply conditions, a water supply shortage or threatened shortage exists and a consumer demand reduction is necessary to make more efficient use of water and appropriately respond to existing water conditions. Upon the declaration by the District of a Stage 2 condition, the District will implement the mandatory conservation measures identified in this Section. In addition to the prohibited uses of water identified in Section 7, the following additional water conservation requirements apply during Stage 2:

1. **Watering Days:** Watering or irrigating of lawn, landscape, agricultural or other vegetated area with potable water is limited to three days per week on a schedule established and posted by the District. During the months of November through March, watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to no more than one day per week on a schedule established and posted by the District. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.

   Alternatively, a customer may submit a written request to the General Manager for approval of a plan that includes an alternative watering schedule. The General Manager may approve such alternate plan upon determining that the alternate plan, in conjunction with other conservation measures, achieves an equivalent level of water conservation. If approved, the customer shall have the burden of showing that the alternate plan continues to achieve an equivalent level of water conservation, or the General Manager's approval will be revoked, and the customer will be subject to the "watering days" regulations described in this subsection.

2. **Obligation to Fix Leaks, Breaks or Malfunctions**: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within forty-eight (48) hours of notification by the District unless other arrangements are made with the District.

3. **Limits on Filling Man-made Lakes or Ponds**: Filling or re-filling man-made lakes or ponds is prohibited, except to the extent needed to sustain aquatic life, provided that such animals are of significant value and have been actively managed within the water feature prior to declaration of a supply shortage level under this Ordinance.

4. **Limits on Washing Vehicles:** Using water to wash or clean a vehicle, including but not limited to, any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not, is prohibited except by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, by high pressure/low volume wash systems, or at a commercial car washing facility that utilizes a re-circulating water system to capture or reuse water.

5. **Limits on Re-filling Residential Swimming Pools & Spas:** Re-filling of more than one foot of residential swimming pools or outdoor spas with potable water is prohibited. Re-filling of more than one foot of residential swimming pools or outdoor spas with potable water is permitted if:

    a. The project is necessary to protect the public health, safety, and welfare; or

    b. The applicant provides substantial evidence to the satisfaction of the District of an enforceable commitment that water demands for the project will be offset by the implementation of the District's Best Practices or other means.

6. **New Pool Construction**: All pool owners and operators and their agents or contractors shall, to the extent feasible, adhere to the District's Best Practices as promulgated by the General Manager

7. **Limits on use of Potable Water for Construction:** The use of domestic water for construction purposes shall only be permitted by, and in accordance with the provisions of, a construction water use permit obtained from the District Chief Engineer or his designee, otherwise, recycled water is to be used.

C. Stage 3 - Mandatory Conservation - Serious Drought Conditions. A Stage 3 condition exists when the District notifies its residents and businesses that a significant reduction in consumer demand is necessary to maintain sufficient water supplies for public health and safety. In addition to the mandatory water conservation measures for Stage 2, the following water conservation measures shall apply during Stage 3:

1. **Watering Days:** Watering or irrigating of lawn, landscape, agricultural or other vegetated area with potable water is limited to two days per week on a schedule established and posted by the District. During the months of November through March, watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to no more than one day per week on a schedule established and posted by the District. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.

    Alternatively, a customer may submit a written request to the General Manager for approval of a plan that includes an alternative watering schedule. The General Manager

may approve such alternate plan upon determining that the alternate plan, in conjunction with other conservation measures, achieves an equivalent level of water conservation. If approved, the customer shall have the burden of showing that the alternate plan continues to achieve an equivalent level of water conservation, or the General Manager's approval will be revoked, and the customer will be subject to the "watering days" regulations described in this subsection.

2. **Obligation to Fix Leaks, Breaks or Malfunctions**: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within twenty four (24) hours of notification by the District unless other arrangements are made with the District.

3. **Man-Made Lakes or Ponds:** Filling or refilling of man-made lakes or ponds shall only be permitted by, and in accordance with the provisions of, a man-made lake filling permit obtained from the District General Manager or his designee.

4. **No New Potable Water Service**: Upon declaration of a Stage 3 condition, no new potable water service will be provided, no new temporary meters or permanent meters will be provided, and no will-serve letters will be issued, except under the following circumstances:

    a. District-approved plans and specifications have been issued; or
    b. A valid, permit has been issued for the project; or
    c. The project is necessary to protect the public health, safety, and welfare; or
    d. The applicant provides substantial evidence of an enforceable commitment that water demands for the project will be offset prior to the provision of a new water meter(s) to the satisfaction of the District.

    This provision does not preclude the resetting or turn-on of meters to provide continuation of water service or the restoration of service that has been interrupted for a period of one year or less.

5. **No New Annexations:** Upon the declaration of a Stage 3 condition, the District will suspend consideration of annexations to its service area. This subsection does not apply to boundary corrections and annexations that will not result in any increased use of potable water.

D. Stage 4 - Mandatory Conservation - Severe Drought Conditions. A Stage 4 condition exists when the District declares severe drought conditions exists and notifies its residents and businesses that a major reduction in consumer demand is necessary to maintain sufficient water supplies for public health and safety. In addition to the mandatory conservation measures for Stages 2 and 3, the following water conservation measures shall apply during Stage 4:

1. **Irrigation**. All outdoor irrigation with potable water is prohibited.

2. **No agricultural use of water**. Use of water for agricultural or commercial nursery purposes is prohibited, except for livestock watering.

3. **Prohibition of vehicle washing**. Washing of autos, trucks, trailers, boats, airplanes or other types of mobile equipment is prohibited. Washing is permitted at any time upon the immediate premises of a commercial car wash. The use of water by all types of commercial car washes shall be reduced in volume by 50%. Further, such washings are exempted from these regulations where the health, safety and welfare of the public is contingent upon frequent vehicle cleaning such as garbage trucks and vehicles used to transport food and perishables.

4. **Prohibition on filling recreational water facilities.** Filling, refilling or adding of water to residential swimming pools, spas, ponds or lakes is prohibited.

SECTION 9. Mandatory Conservation Stage Implementation. The District regularly monitors the projected supply and demand for water by its customers. The Board shall determine the extent of the conservation required through implementation or termination of particular conservation stages in order for the District to prudently plan for and supply water to its customers. The Board may order that the appropriate stage of water conservation be implemented or terminated by resolution adopted in accordance with this Ordinance. Within five (5) days following the declaration of the response level, the District shall publish a copy of the resolution in a newspaper used for publication of official notices and shall post a notice on the District's Web site at www.smwd.com. Adoption of a resolution terminating any stage shall be made at a public meeting of the Board. The mandatory conservation measures applicable to Stage 2, 3 or 4 conditions shall take effect on the tenth (10) day after the date the response level is declared.

SECTION 10. Exemptions. Customers may be exempted from application of this Ordinance for a certain type of use if the General Manager issues a permit allowing such use and if such permit issuance is based on a finding that enforcement of the applicable restriction would (1) cause an unnecessary and undue hardship to the customer applying for such permit or the public, or (2) cause or threaten an immediate emergency condition affecting the health, sanitation, fire protection, or safety of the customer or the public; or (3) cause the customer to violate a term or condition in a permit issued by a state or federal water agency. The General Manager may require the installation and use of such water conservation devices or practices as he deems appropriate as a condition of the exemption permit.

SECTION 11. Enforcement. The District intends to provide education and notice to its customers of the terms of the conservation stage then currently in place. The District's customers have previously responded to meet the water needs of the District. However, in the event active enforcement is required any customer who violates the provisions of this Ordinance by either excess use of water or by specific violation of one or more of the applicable water use restrictions for a particular mandatory conservation stage may be cited by the General Manager or his designated representative in accordance with the following provisions.

A. Progressive Enforcement Measures. The District may impose progressive enforcement measures for repeated, willful violations as follows:

First Violation: Citation
Second Violation: Penalty of $100 placed on the water bill.
Third Violation: Penalty of $250 placed on the water bill.

Fourth Violation: Penalty of $500 placed on the water bill, and after a 15 day written notification, the customer shall also be subject to a flow restriction. A person or entity that violates this Ordinance is responsible for payment of the District's charges for installing and/or removing any flow restricting device and for disconnecting and/or reconnecting service per the District's schedule of charges then in effect. The charge for installing and/or removing any flow restricting device must be paid to the District before the device is removed. Nonpayment will be subject to the same remedies as nonpayment of basic water rates.

B. Misdemeanor. In addition to, or as an alternative to the enforcement measures provided herein, or any other applicable civil or criminal remedies, violations of this Ordinance may be prosecuted as a misdemeanor and punishable by imprisonment in the county jail for not more than thirty (30) days, or by a fine not exceeding one thousand dollars ($1,000), or by both.

C. Discontinuing Service. In addition to any fines, and other remedies, the District, after a 15 day written notification, may disconnect a customer's water service for willful violations of this Ordinance, subject to the appeals process described herein.

D. Administrative Procedures for Imposing Fines.

1. Notice. If the General Manager, or designated representative, determines to impose a fine on a person ("violator") who has violated any provision of this Ordinance, a written notice of the violation will be sent to the violator. The notice shall provide in sufficient detail the violation(s), the amount of the penalty being imposed, and the date or times by which the penalty shall be paid to the District. The notice shall notify the violator that the fine will be imposed in the violator's next water bill and that the violator may appeal the District's imposition of the fine in writing within ten (10) calendar days of the date of said notice. Service of any notice required under this Section shall be made by the following means:

i. Personal service in the same manner as a summons in a civil action; or

ii. Registered United States mail, which service shall be completed at the time of deposit into the United States mail.

E. Appeal. Within ten (10) calendar days of the date of such notice described in Section 11, subdivision (D) from the District, the customer may appeal the proposed fine to the General Manager in writing, setting forth a description of the violation, any cure measures undertaken, the amount of the fine, the basis for the appeal, and the remedy sought. The General Manager, or designated representative, shall consider the appeal and shall issue a written decision to the customer. If the customer fails to appeal the ten (10) calendar days

period specified in the District's notice to the customer, the customer shall lose its right to appeal the fine.

F. Appeals to District Board of Directors. A customer may appeal a decision of the General Manager on an appeal of an administrative fine to the District Board of Directors within ten (10) days of the decision upon written request for a hearing. The request shall state the grounds for the appeal. At a public meeting, the District Board of Directors shall act as the approval authority and review the appeal de novo (granting no deference to the prior decision of the General Manager). The decision of the District Board of Directors is final.

i. The appeals procedures provided in this Section 11, subdivisions (E) and (F) shall be applicable to all administrative decisions related to this Ordinance.

G. Fund for Conservation. All fines collected by the District pursuant to this Ordinance shall be used by the District to further water conservation efforts in the District.

H. Separate Offenses. Each day that a violation of this Ordinance occurs is a separate offense. All remedies provided herein shall be cumulative and not exclusive.

SECTION 12. Rules and Regulations for Water Service. The provisions of this Ordinance are in addition to all other District Rules and Regulations for Water Service, and in the event of a conflict between this Ordinance and other rules and regulations relating to the same subject matter, the conflict shall, insofar as practical, be resolved to implement the purposes of this Ordinance.

SECTION 13. Severability. If any section, subsection, sentence, clause or phrase of this Ordinance is for any reason held to be unconstitutional or invalid by a court of competent jurisdiction, such decision shall not affect the remaining portions of this Ordinance and those shall remain in full force and effect.

SECTION 14. CEQA Exemption. The District finds that this Ordinance and actions taken hereafter pursuant to this Ordinance are exempt from the California Environmental Quality Act pursuant to Public Resources Code Section 21080(b)(4) and California Code of Regulations, Title 14, Section 15301. The General Manager of the District is hereby authorized and directed to file a Notice of Exemption as soon as possible following adoption of this Ordinance.

SECTION 15. Effective Date and Publication. This Ordinance shall become effective as of the date of adoption and shall be published within ten days of adoption, pursuant to the California Water Code Section 376.

ADOPTED, SIGNED AND APPROVED this 17th day of October, 2014.

Saundra F. Jacobs
President, Board of Directors
Santa Margarita Water District

ATTEST:

Kelly Radvansky
Secretary, Board of Directors
Santa Margarita Water District

STATE OF CALIFORNIA)

COUNTY OF ORANGE)
ss

I, Kelly Radvansky, Secretary of the Board of Directors of the Santa Margarita Water District, do hereby certify that the foregoing Ordinance was duly adopted by the Board of Directors said District at a regular meeting held on the 17th day of October, 2014, and that it was so adopted by the following vote:

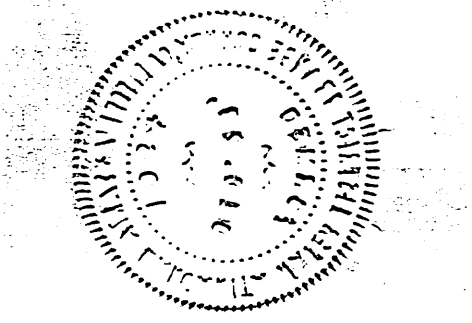
AYES: 5	DIRECTORS: Jacobs, Olson, Wilson, Gibson, McCusker
NOES:	DIRECTORS:
ABSENT:	DIRECTORS:
ABSTAIN:	DIRECTORS:

Kelly Radvansky
Secretary, Board of Directors
Santa Margarita Water District

I, Kelly Radvansky, Secretary of the Board of Directors of the Santa Margarita Water District, do hereby certify that the above and forgoing is a full, true, and correct copy of Ordinance No. 2014-10-03 of said Board, and that the same has not been amended or repealed.

Dated: October 17, 2014

Kelly Radvansky
Secretary, Board of Directors
Santa Margarita Water District



Santa Margarita Water District

MEMORANDUM

RESIDENTIAL POOL CONSTRUCTION BEST PRACTICES FOR LONG-TERM WATER USE EFFICIENCY

Implementation of the following Best Practices is encouraged for the construction and operation of any pool or spa installation on the premises of a private single-family residence:

Installation of a pool/spa cover or use of cover elements over 75% of the pool surface to reduce evaporation

- Installation of a cartridge filtering system to reduce the waste associated with backwash of filters
- Installation of non-mechanical, sensor-based automatic manual or timer-based fill mechanisms to prevent over-filling and waste
- Showing demonstrable off-sets to long-term water use by pool decking, and surrounding landscaping compared to a traditional landscape.

APPENDIX E

Notification of Public and Service Area Suppliers

BOARD OF DIRECTORS
BETTY H. OLSON, PH.D CHARLEY WILSON
CHARLES T. GIBSON SAUNDRA F. JACOBS
JUSTIN McCUSKER

DANIEL R. FERONS
GENERAL MANAGER

Santa Margarita Water District

NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

Casta Del Sol HOA
27651 Casta Del Sol
Mission Viejo, CA 92692

Subject: 2015 Urban Water Management Plan (UWMP)

The Santa Margarita Water District is in the process of preparing its 2015 Urban Water Management Plan (UWMP). UWMPs are prepared by California's urban water suppliers to support their long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. Every urban water supplier that provides either 3,000+ acre-feet of water annually or serves 3,000+ connections is required to prepare an UWMP every five years.

Pursuant to the requirement of California Water Code, Division 6, Part 2.6 Urban Water Management Planning, Section 10621 (b), every urban water supplier required to prepare a plan shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.

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Daniel Peterson
danielp@smwd.com

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GENERAL MANAGER

Santa Margarita Water District

NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

City of Mission Viejo
200 Civic Center
Mission Viejo, CA 92691

Subject: 2015 Urban Water Management Plan (UWMP)

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Santa Margarita Water District

NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

City of Rancho Santa Margarita
22112 El Paseo
Rancho Santa Margarita, CA 92688

Subject: 2015 Urban Water Management Plan (UWMP)

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Santa Margarita Water District

NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

City of San Clemente
100 Avenida Presidio
San Clemente, CA 92672

Subject: 2015 Urban Water Management Plan (UWMP)

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NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

City of San Juan Capistrano
32400 Paseo Adelanto
San Juan Capistrano, CA 92675

Subject: 2015 Urban Water Management Plan (UWMP)

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NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

Coto de Caza Master Association
16845 Von Karman Ste 200
Irvine, CA 92606

Subject: 2015 Urban Water Management Plan (UWMP)

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NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

County of Orange
1300 S. Grand Avenue Bldg. A
Santa Ana, CA 92705

Subject: 2015 Urban Water Management Plan (UWMP)

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NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

County of Orange
12 Civic Center Plaza, Room 101
Santa Ana, CA 92701

Subject: 2015 Urban Water Management Plan (UWMP)

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NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

Cucamonga Valley Water District
10440 Ashford Street
Rancho Cucamonga, CA 91730

Subject: 2015 Urban Water Management Plan (UWMP)

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March 18, 2016

El Toro Water District
24251 Los Alisos Blvd
Lake Forest, CA 92630

Subject: 2015 Urban Water Management Plan (UWMP)

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March 18, 2016

Golden State Water Company
630 E. Foothill Blvd.
San Dimas, CA 91773

Subject: 2015 Urban Water Management Plan (UWMP)

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NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

Inland Empire Utilities Agency
PO Box 9020
Chino Hills, CA 91709

Subject: 2015 Urban Water Management Plan (UWMP)

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NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

Irvine Ranch Water District
15600 Sand Canyon Ave
Irvine, CA 92618

Subject: 2015 Urban Water Management Plan (UWMP)

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NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

LARMAC
1 Daisy Street
Ladera Ranch, CA 92694

Subject: 2015 Urban Water Management Plan (UWMP)

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NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

Mission Environmental HOA
2603 Main Street Suite 500
Irvine, CA 92614

Subject: 2015 Urban Water Management Plan (UWMP)

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March 18, 2016

Mission Viejo Lake Association
22555 Olympiad Road
Mission Viejo, CA 92692

Subject: 2015 Urban Water Management Plan (UWMP)

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March 18, 2016

Moulton Niguel Water District
27500 La Paz Road
Laguna Niguel, CA 92677

Subject: 2015 Urban Water Management Plan (UWMP)

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March 18, 2016

Municipal Water District of Orange County
18700 Ward Street
Fountain Valley, CA 92708

Subject: 2015 Urban Water Management Plan (UWMP)

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March 18, 2016

Rancho Mission Viejo
28811 Ortega Highway
San Juan Capistrano, CA 92675

Subject: 2015 Urban Water Management Plan (UWMP)

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If your agency would like more information or have any questions, please direct any inquiries to:

Daniel Peterson
danielp@smwd.com

BOARD OF DIRECTORS
BETTY H. OLSON, PH.D
CHARLES T. GIBSON
JUSTIN McCUSKER
CHARLEY WILSON
SAUNDRA F. JACOBS

DANIEL R. FERONS
GENERAL MANAGER

Santa Margarita Water District

NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

SAMLARC
22342A Avenida Empresa, Suite 102A
Rancho Santa Margarita, CA 92688

Subject: 2015 Urban Water Management Plan (UWMP)

The Santa Margarita Water District is in the process of preparing its 2015 Urban Water Management Plan (UWMP). UWMPs are prepared by California's urban water suppliers to support their long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. Every urban water supplier that provides either 3,000+ acre-feet of water annually or serves 3,000+ connections is required to prepare an UWMP every five years.

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NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

San Juan Basin Authority
26111 Antonio
Las Flores, CA 92688

Subject: 2015 Urban Water Management Plan (UWMP)

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NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

South Coast Water District
31592 West Street
Laguna Beach, CA 92651

Subject: 2015 Urban Water Management Plan (UWMP)

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Santa Margarita Water District

NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

South Orange County Wastewater Authority
34156 Del Obispo Street
Dana Point, CA 92629

Subject: 2015 Urban Water Management Plan (UWMP)

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GENERAL MANAGER

Santa Margarita Water District

NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

Talega
15241 Laguna Canyon Road
Irvine, CA 92618

Subject: 2015 Urban Water Management Plan (UWMP)

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GENERAL MANAGER

Santa Margarita Water District

NOTICE OF PREPARATION OF SANTA MARGARITA WATER DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN

March 18, 2016

Trabuco Canyon Water District
32003 Dove Canyon Dr
Trabuco Canyon, CA 92679

Subject: 2015 Urban Water Management Plan (UWMP)

The Santa Margarita Water District is in the process of preparing its 2015 Urban Water Management Plan (UWMP). UWMPs are prepared by California's urban water suppliers to support their long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. Every urban water supplier that provides either 3,000+ acre-feet of water annually or serves 3,000+ connections is required to prepare an UWMP every five years.

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Daniel Peterson
danielp@smwd.com

AFFIDAVIT OF PUBLICATION

STATE OF CALIFORNIA,)
) ss.
County of Orange)

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the principal clerk of **The Orange County Register**, a newspaper of general circulation, published in the city of Santa Ana, County of Orange, and which newspaper has been adjudged to be a newspaper of general circulation by the Superior Court of the County of Orange, State of California, under the date of November 19, 1905, Case No. A-21046, that the notice, of which the annexed is a true printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

05/18, 05/25/2016

"I certify (or declare) under the penalty of perjury under the laws of the State of California that the foregoing is true and correct":

Executed at Santa Ana, Orange County, California, on

Date: May 25, 2016

Sandra Campos

The Orange County Register
625 N. Grand Ave.
Santa Ana, CA 92701
(714) 796-2209

PROOF OF PUBLICATION

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that the Board of Directors of the Santa Margarita Water District (District) will hold a public hearing to provide opportunity for public input on the draft update of the District's 2015 Urban Water Management Plan (UWMP). UWMPs are prepared by California's urban water suppliers to support their long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. Every urban water supplier that either provides over 3,000 acre-feet of water annually or serves 3,000 or more connections is required to prepare an UWMP every five years.

NOTICE IS HEREBY FURTHER GIVEN that said public hearing will be held on June 1, 2016, at 7 p.m. in the Board Room of the District's office at 26111 Antonio Parkway, Rancho Santa Margarita, CA 92688, at which time and place any and all persons interested may appear and be heard thereon. A copy of the draft UWMP is currently available for public review at http://www.smwd.com/operations/reports.html. For information please contact Don Bunts at 949-459-6602.

/s/:_____
Don Bunts, Chief Engineer
Santa Margarita Water District

Published: Orange County Register May 18, 25, 2016 R-878 10163129

APPENDIX F

Adopted UWMP Resolution

RESOLUTION NO. 2016-06-03

RESOLUTION OF THE BOARD OF DIRECTORS OF SANTA MARGARITA WATER DISTRICT ADOPTING THE 2015 URBAN WATER MANAGEMENT PLAN

WHEREAS, the Urban Water Management Planning Act (Water Code, Part 2.6, Section 10610 et seq.) mandates that every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre feet of water annually, prepare an Urban Water Management Plan, and update its Urban Water Management Plan at least once every five years on or before December 31 in years ending in five and zero; and

WHEREAS, pursuant to recent amendments to the Urban Water Management Planning Act, urban water suppliers are required to update and electronically submit their 2015 Urban Water Management Plans to the California Department of Water Resources by July 1, 2016; and

WHEREAS, the Santa Margarita Water District ("District") has prepared its 2015 Urban Water Management Plan ("2015 Plan") and has undertaken certain coordination, notice, public involvement, public comment, and other procedures in relation to its 2015 Plan; and

WHEREAS, the District held a public hearing to review its 2015 Plan on June 1, 2016; and

WHEREAS, the Board of Directors of the District has reviewed and considered the purposes and requirements and of the Urban Water Management Planning Act and the Water Conservation Act of 2009, the contents of the 2015 Plan, and the documentation contained in the administrative record in support of the 2015 Plan, and has determined that the factual analyses and conclusions set forth in the 2015 Plan are supported by substantial evidence.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Santa Margarita Water District that

1. The Board of Directors confirms Option 1 under Water Code section 10608.20(b) for determining the District's urban water use targets, and approves and adopts the District 2015 Plan as set forth in Exhibit A to this Resolution in accordance with the Urban Water Management Planning Act, as amended set forth in California Water Code Section 10610 *et seq.*

2. The General Manager is hereby authorized and directed as follows:

    a. to include a copy of this Resolution in the 2015 Plan and, in accordance with Water Code sections 10621(d) 10644(a), to electronically submit a copy of the

2015 Plan to the California Department of Water Resources no later than July 1, 2016;

b. in accordance with Water Code section 10644(a) to submit a copy of the 2015 Plan to the California State Library within thirty (30) days after this adoption date;

c. in accordance with Water Code section 10644(a), and in satisfaction of Water Code section 10635(b), to submit a copy of the 2015 Plan, specifically including the portion of the Plan prepared in accordance with Water Code section 10635(a), to any city or county within which the District provides water supplies within thirty (30) days after this adoption date;

d. in accordance with Water Code section 10645, to make the 2015 Urban Water Management Plan available for public review at the District's offices during normal business hours not later than thirty (30) days after filing a copy thereof with the California Department of Water Resources;

e. to implement the components of the 2015 Urban Water Management Plan in accordance with the Urban Water Management Planning Act and the Water Conservation Act of 2009; and

f. to recommend to the Board of Directors additional steps necessary or appropriate to effectively carry out the implementation of the 2015 Plan.

APPROVED AND ADOPTED this 1st day of June, 2016.

Charles Wilson
President of the Board of Directors
Santa Margarita Water District

ATTEST:

Kelly Radvansky
Secretary to the Board of Directors
Santa Margarita Water District

STATE OF CALIFORNIA)

COUNTY OF ORANGE)

ss

I, Kelly Radvansky, Secretary of the Board of Directors of the Santa Margarita Water District, do hereby certify that the foregoing Resolution was duly adopted by the Board of Directors said District at a regular meeting held on the 1st day of June, 2016 and that it was so adopted by the following vote:

AYES: 3	DIRECTORS: Wilson, Gibson, Jacobs
NOES:	DIRECTORS:
ABSENT:	DIRECTORS: McCusker, Olson
ABSTAIN:	DIRECTORS:

Kelly Radvansky
Secretary to the Board of Directors
Santa Margarita Water District

I, Kelly Radvansky, Secretary of the Board of Directors of the Santa Margarita Water District, do hereby certify that the above and forgoing is a full, true, and correct copy of Resolution No. 2016-06-03 of said Board, and that the same has not been amended or repealed.

DATED: June 1, 2016

Kelly Radvansky
Secretary to the Board of Directors
Santa Margarita Water District

(Seal)

APPENDIX G

AWWA Water Loss Audit Worksheet

AWWA Free Water Audit Software v5.0

American Water Works Association Copyright © 2014, All Rights Reserved.

This spreadsheet-based water audit tool is designed to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery. It provides a "top-down" summary water audit format, and is not meant to take the place of a full-scale, comprehensive water audit format.

Auditors are strongly encouraged to refer to the most current edition of AWWA M36 Manual for Water Audits for detailed guidance on the water auditing process and targetting loss reduction levels

The spreadsheet contains several separate worksheets. Sheets can be accessed using the tabs towards the bottom of the screen, or by clicking the buttons below.

Please begin by providing the following information

Name of Contact Person:	Daniel Peterson
Email Address:	danielp@smwd.com
Telephone | Ext.:	
Name of City / Utility:	Santa Margarita Water District
City/Town/Municipality:	Santa Margarita
State / Province:	California (CA)
Country:	USA
Year:	2014 Financial Year
Start Date:	06/2013 Enter MM/YYYY numeric format
End Date:	07/2014 Enter MM/YYYY numeric format
Audit Preparation Date:	4/22/2016
Volume Reporting Units:	Acre-feet
PWSID / Other ID:	

The following guidance will help you complete the Audit

All audit data are entered on the ***Reporting Worksheet***

- Value can be entered by user
- Value calculated based on input data
- These cells contain recommended default values

Use of Option (Radio) Buttons: Pcnt: 0.25% Value:

Select the default percentage by choosing the option button on the left

To enter a value, choose this button and enter a value in the cell to the right

The following worksheets are available by clicking the buttons below or selecting the tabs along the bottom of the page

Instructions
The current sheet. Enter contact information and basic audit details (year, units etc)

Reporting Worksheet
Enter the required data on this worksheet to calculate the water balance and data grading

Comments
Enter comments to explain how values were calculated or to document data sources

Performance Indicators
Review the performance indicators to evaluate the results of the audit

Water Balance
The values entered in the Reporting Worksheet are used to populate the Water Balance

Dashboard
A graphical summary of the water balance and Non-Revenue Water components

Grading Matrix
Presents the possible grading options for each input component of the audit

Service Connection Diagram
Diagrams depicting possible customer service connection line configurations

Definitions
Use this sheet to understand the terms used in the audit process

Loss Control Planning
Use this sheet to interpret the results of the audit validity score and performance indicators

Example Audits
Reporting Worksheet and Performance Indicators examples are shown for two validated audits

Acknowledgements
Acknowledgements for the AWWA Free Water Audit Software v5.0

If you have questions or comments regarding the software please contact us via email at: wlc@awwa.org

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0
American Water Works Association.

? Click to access definition
+ Click to add a comment

Water Audit Report for: Santa Margarita Water District
Reporting Year: 2014 6/2013 - 7/2014

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<---------- Enter grading in column 'E' and 'J' ---------->

Master Meter and Supply Error Adjustments

WATER SUPPLIED				Pcnt:	Value:	
Volume from own sources:	n/a	0.000	acre-ft/yr			acre-ft/yr
Water imported:	7	29,210.786	acre-ft/yr	-1.10%		acre-ft/yr
Water exported:	2	1,186.966	acre-ft/yr			acre-ft/yr
WATER SUPPLIED:		**28,348.712**	acre-ft/yr	Enter negative % or value for under-registration Enter positive % or value for over-registration		

AUTHORIZED CONSUMPTION				Pcnt:	Value:	
Billed metered:	6	27,026.065	acre-ft/yr	Click here: ? for help using option buttons below		
Billed unmetered:	8	3.856	acre-ft/yr			
Unbilled metered:	9	8.094	acre-ft/yr			
Unbilled unmetered:	4	46.129	acre-ft/yr		46.129	acre-ft/yr
AUTHORIZED CONSUMPTION:		**27,084.144**	acre-ft/yr	Use buttons to select percentage of water supplied OR value		

WATER LOSSES (Water Supplied - Authorized Consumption)				Pcnt:	Value:	
		1,264.568	acre-ft/yr			
Apparent Losses						
Unauthorized consumption:		70.872	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	3	67.755	acre-ft/yr	0.25%		acre-ft/yr
Systematic data handling errors:	7	5.000	acre-ft/yr		5.000	acre-ft/yr
Apparent Losses:		**143.627**	acre-ft/yr			

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses:		**1,120.942**	acre-ft/yr
WATER LOSSES:		**1,264.568**	acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER:		**1,318.791**	acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	8	595.1	miles
Number of active AND inactive service connections:	8	53,000	
Service connection density:		89	conn./mile main
Are customer meters typically located at the curbstop or property line?		Yes	
Average length of customer service line:			(length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:	3	90.0	psi

COST DATA

Total annual cost of operating water system:	10	$39,050,439	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$3.30	$/1000 gallons (US)	
Variable production cost (applied to Real Losses):	10	$923.50	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 72 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Water imported
2: Customer metering inaccuracies
3: Billed metered

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

WAS v5.0

American Water Works Association.

Water Audit Report for: Santa Margarita Water District

Reporting Year: 2014 | 6/2013 - 7/2014

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 72 out of 100 ***

System Attributes:

	Apparent Losses:	143.627	acre-ft/yr
+	Real Losses:	1,120.942	acre-ft/yr
=	**Water Losses:**	**1,264.568**	acre-ft/yr
?	Unavoidable Annual Real Losses (UARL):	1,126.03	acre-ft/yr
	Annual cost of Apparent Losses:	$154,649	
	Annual cost of Real Losses:	$1,035,190	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	4.7%	
	Non-revenue water as percent by cost of operating system:	3.2%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	2.42	gallons/connection/day
	Real Losses per service connection per day:	18.88	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.21	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	1,120.94	acre-feet/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	1.00	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

American Water Works Association.
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Use this worksheet to add comments or notes to explain how an input value was calculated, or to document the sources of the information used.

General Comment:	

Audit Item	Comment
Volume from own sources:	n/a
Vol. from own sources: Master meter error adjustment:	n/a
Water imported:	SMWD imports all water from MWDOC. The system boundary was drawn at meters SC-1, SC-2A, SC-3, SC-4A, SC-5A, OC-82, and Plaza CM-12.
Water imported: master meter error adjustment:	Volumetric drawdown testing conducted on the SCP suggests meter underregistration at SC-1, SC-2A, SC-3, and SC-5A.
Water exported:	SMWD exported water through emergency interties with Trabuco Canyon and a line used to fill the Portola Lake.
Water exported: master meter error adjustment:	In the absence of test data, no adjustment was warranted
Billed metered:	SMWD meters more than 99% of their customers. Billing records are available in a well organized computerized system. Consumption has been prorated to correct for any error introduced by the monthly billing cycle.
Billed unmetered:	SMWD delivers water to several unmetered condominiums. The total consumption for these conduminiums has been estimated at 140 CCF/month of 3.85 AF.
Unbilled metered:	SMWD department use is stored in the billing database, but the water is not billed for. The total used by the water department was 8.1 AF in FY14

Audit Item	Comment
Unbilled unmetered:	SMWD had records of the estimated volume of water used to flush each month. The total used in FY14 was estimated to be 17.78 AF. WSO also included an estimate of 0.10% of Water Supplied to capture fire department use in addition to sewer and water main flushing.
Unauthorized consumption:	The AWWA default value was used.
Customer metering inaccuracies:	In the absence of test data, WSO estimated customer metering innacuracies to be 0.25% of Metered Authorized Consumption. This estimate was informed by the overall results of the water balance which suggest very low water losses.
Systematic data handling errors:	WSO estimated the loss associated with systematic data handling errors to be 5 AF. This low estimate was employed because of the overall integrity of the billing data management system.
Length of mains:	The length of mains was calculated using an electronic inventory of mains.
Number of active AND inactive service connections:	53,000 reflects data showing approximately 52,500 connections + a preliminary estimate of 500 inactive service connections (pending further information).
Average length of customer service line:	Meters are located at the curbstop
Average operating pressure:	An average operating pressure of 96 psi was calculated using pressure data collected at representative locations throughout the SMWD distribution system. These data were weighted by miles of roads per pressure zone as a proxy for miles of mains. The pressure of 90 psi was employed in the model to both aknowledge uncertainty in the pressure survey methodology and to ensure that the performance indicators make sense in the context of very low water losses
Total annual cost of operating water system:	The total annual cost of operating the water system was calculated by evaluating the percent each expense was relevant to the operations and maintanance of the potable distribution system.
Customer retail unit cost (applied to Apparent Losses):	The customer retail unit cost was calculated by dividing the total revenue from commodity water sales by the total volume of water sold in FY14.
Variable production cost (applied to Real Losses):	The variable production cost reflects the unit cost of imported water from MWDOC.

AWWA Free Water Audit Software: Water Balance

WAS v5.0

American Water Works Association.

Water Audit Report for:	Santa Margarita Water District
Reporting Year:	2014 (6/2013 - 7/2014)
Data Validity Score:	72

		Water Exported 1,186.966		Billed Water Exported		Revenue Water 1,186.966
Own Sources (Adjusted for known errors) 0.000	System Input 29,535.678	Water Supplied 28,348.712	Authorized Consumption 27,084.144	Billed Authorized Consumption 27,029.921	Billed Metered Consumption (water exported is removed) 27,026.065	Revenue Water 27,029.921
					Billed Unmetered Consumption 3.856	
				Unbilled Authorized Consumption 54.223	Unbilled Metered Consumption 8.094	Non-Revenue Water (NRW) 1,318.791
					Unbilled Unmetered Consumption 46.129	
			Water Losses 1,264.568	Apparent Losses 143.627	Unauthorized Consumption 70.872	
					Customer Metering Inaccuracies 67.755	
					Systematic Data Handling Errors 5.000	
Water Imported 29,535.678				Real Losses 1,120.942	Leakage on Transmission and/or Distribution Mains Not broken down	
					Leakage and Overflows at Utility's Storage Tanks Not broken down	
					Leakage on Service Connections Not broken down	

AWWA Free Water Audit Software:
Dashboard

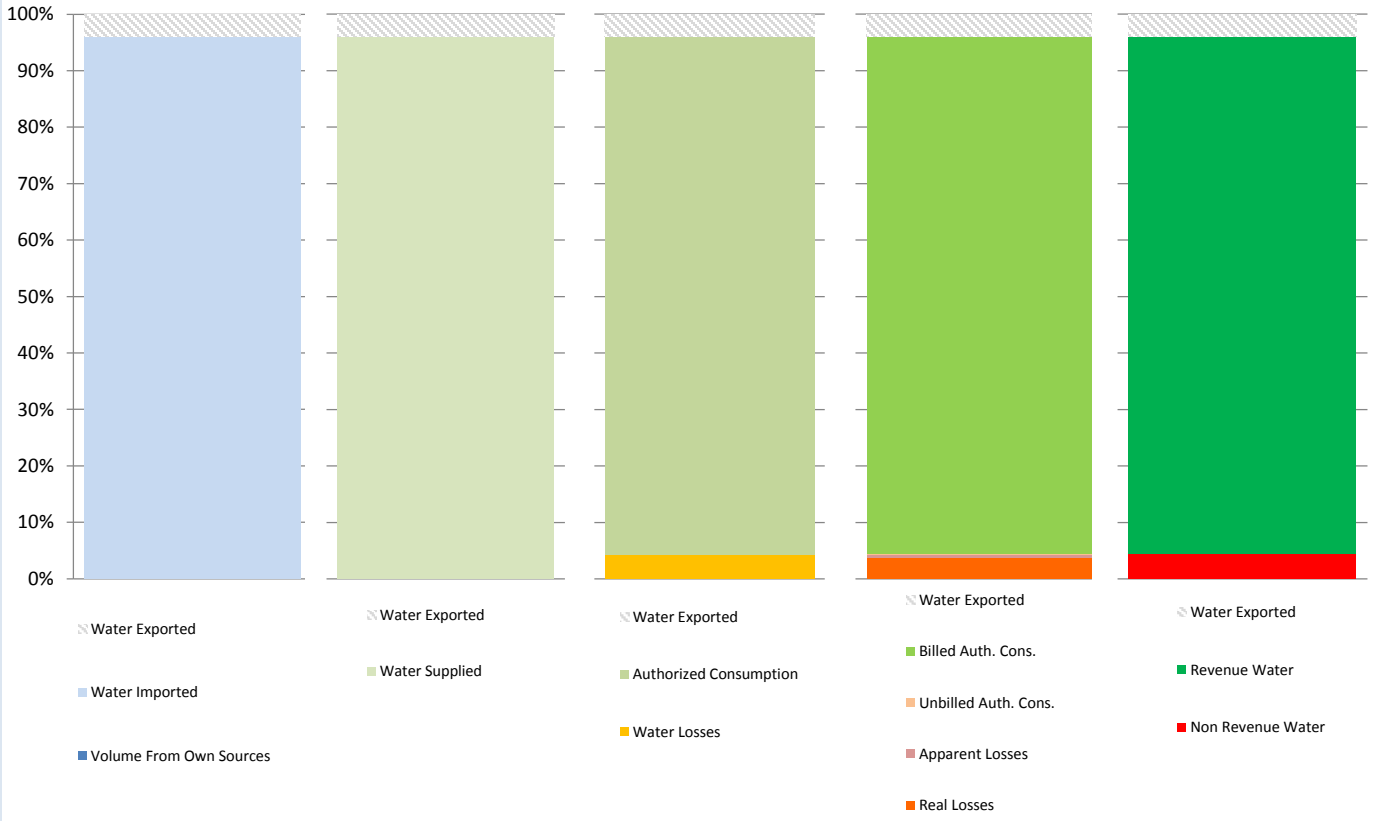
WAS v5.0

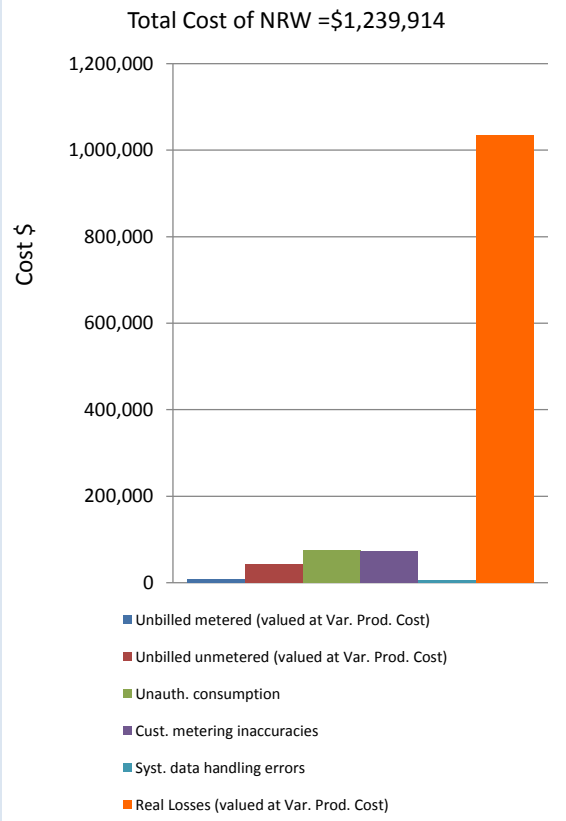
American Water Works Association.
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The graphic below is a visual representation of the Water Balance with bar heights propotional to the volume of the audit components

Water Audit Report for:	**Santa Margarita Water District**	
Reporting Year:	**2014**	**6/2013 - 7/2014**
Data Validity Score:	**72**	

○ Show me the VOLUME of Non-Revenue Water
◉ Show me the COST of Non-Revenue Water





APPENDIX H

Water Use Efficiency Implementation Report

Orange County

Water Use Efficiency Programs Savings
and
Implementation Report

Retrofits and Acre-Feet Water Savings for Program Activity

Program	Program Start Date	Retrofits Installed in	Month Indicated		Current Fiscal Year		Overall Program		
			Interventions	Water Savings	Interventions	Water Savings	Interventions	Annual Water Savings[4]	Cumulative Water Savings[4]
High Efficiency Clothes Washer Program	2001	October-15	532	1.53	2,244	16.15	105,611	3,644	20,708
Smart Timer Program - Irrigation Timers	2004	October-15	1	0.00	371	15.65	13,438	4,655	28,933
Rotating Nozzles Rebate Program	2007	October-15	3,709	14.83	18,064	135.73	478,934	2,422	9,721
SoCal Water$mart Commercial Plumbing Fixture Rebate Program	2002	September-15	2,767	7.65	3,622	18.06	51,788	3,518	34,157
Water Smart Landscape Program [1]	1997	September-15	12,690	905.55	12,690	2,710.58	12,690	10,632	71,574
Industrial Process Water Use Reduction Program	2006	September-15	0	11.26	1	11.26	14	357	1,357
Turf Removal Program[3]	2010	November-15	947,615	11.05	2,868,923	68	10,386,596	1,454	2,982
High Efficiency Toilet (HET) Program	2005	October-15	2,337	8.28	8,102	114.87	54,376	2,010	11,439
Home Water Certification Program	2013	October-15	11	0.022	42	0.147	301	7.080	15.007
Synthetic Turf Rebate Program	2007						685,438	96	469
Ultra-Low-Flush-Toilet Programs [2]	1992						363,926	13,452	162,561
Home Water Surveys [2]	1995						11,867	160	1,708
Showerhead Replacements [2]	1991						270,604	1,667	19,083
Total Water Savings All Programs				**960**	**2,914,059**	**3,090**	**12,435,583**	**44,073**	**364,706**

(1) Water Smart Landscape Program participation is based on the number of water meters receiving monthly Irrigation Performance Reports.

(2) Cumulative Water Savings Program To Date totals are from a previous Water Use Efficiency Program Effort.

(3) Turf Removal Interventions are listed as square feet.

[4] Cumulative & annual water savings represents both active program savings and passive savings that continues to be realized due to plumbing code changes over time.

HIGH EFFICIENCY CLOTHES WASHERS INSTALLED BY AGENCY

through MWDOC and Local Agency Conservation Programs

Agency	FY 06/07	FY 07/08	FY 08/09	FY 09/10	FY 10/11	FY 11/12	FY 12/13	FY13/14	FY14/15	FY15/16	Total	Current FY Water Savings Ac/Ft (Cumulative)	Cumulative Water Savings across all Fiscal Years	15 yr. Lifecycle Savings Ac/Ft
Brea	132	175	156	42	186	144	93	115	114	43	1,777	0.30	346.91	919
Buena Park	85	114	146	59	230	145	105	106	91	24	1,412	0.19	263.13	731
East Orange CWD RZ	18	22	17	3	23	10	10	8	8	4	185	0.03	38.21	96
El Toro WD	91	113	130	32	162	112	134	121	111	29	1,438	0.23	267.47	744
Fountain Valley	205	219	243	72	289	158	115	102	110	37	2,296	0.24	467.55	1,188
Garden Grove	238	304	332	101	481	236	190	162	165	42	3,227	0.36	641.93	1,670
Golden State WC	339	401	447	168	583	485	265	283	359	106	4,723	0.80	909.33	2,444
Huntington Beach	761	750	751	211	963	582	334	295	319	89	7,930	0.64	1,649.30	4,103
Irvine Ranch WD	1,972	2,052	1,844	1,394	2,621	2,170	1,763	1,664	1,882	676	22,448	4.63	4,161.08	11,615
La Habra	96	136	83	22	179	128	82	114	87	25	1,233	0.16	230.28	638
La Palma	33	35	51	25	76	46	34	25	34	10	429	0.07	78.92	222
Laguna Beach CWD	57	77	77	27	96	57	38	37	39	23	904	0.16	181.03	468
Mesa Water	239	249	246	73	232	176	114	86	89	27	2,352	0.21	498.68	1,217
Moulton Niguel WD	652	716	742	250	1,127	679	442	421	790	337	8,995	2.42	1,691.75	4,654
Newport Beach	245	270	259	57	197	142	116	92	95	36	2,533	0.28	540.91	1,311
Orange	366	365	403	111	349	262	218	163	160	54	3,748	0.44	781.73	1,939
Orange Park Acres	4	8	-	-	-	-	-	-	-	-	12	0.00	3.09	6
San Juan Capistrano	109	103	127	43	190	110	76	73	92	34	1,397	0.30	271.08	723
San Clemente	204	261	278	63	333	206	140	94	141	41	2,516	0.29	494.64	1,302
Santa Margarita WD	654	683	740	257	1,105	679	553	662	792	224	8,907	1.68	1,660.81	4,609
Seal Beach	47	46	57	7	81	51	31	29	38	12	582	0.10	113.15	301
Serrano WD	30	31	23	7	21	20	13	10	26	5	343	0.03	71.90	177
South Coast WD	107	130	148	43	183	112	89	79	68	25	1,522	0.18	297.39	788
Trabuco Canyon WD	69	60	62	28	82	62	30	45	47	19	755	0.14	146.53	391
Tustin	152	146	144	45	174	97	78	59	80	32	1,534	0.23	314.38	794
Westminster	213	171	233	74	329	208	121	82	109	30	2,383	0.20	480.73	1,233
Yorba Linda	288	350	367	117	394	273	181	167	156	64	3,637	0.47	750.09	1,882
MWDOC Totals	7,406	7,987	8,106	3,331	10,686	7,350	5,365	5,094	6,002	2,048	89,218	14.78	17,352.00	17,237
Anaheim	854	847	781	860	910	477	331	285	295	98	10,301	0.68	2,141.25	5,330
Fullerton	269	334	330	69	397	270	200	186	211	63	3,486	0.45	644.49	1,804
Santa Ana	236	235	257	87	355	190	163	131	132	35	2,606	0.25	570.33	1,348
Non-MWDOC Totals	1,359	1,416	1,368	1,016	1,662	937	694	602	638	196	16,393	1.37	3,356.08	3,167
Orange County Totals	8,765	9,403	9,474	4,347	12,348	8,287	6,059	5,696	6,640	2,244	105,611	16.15	20,708.07	20,404

SMART TIMERS INSTALLED BY AGENCY

through MWDOC and Local Agency Conservation ProgramS

	FY 04/05		FY 05/06		FY 06/07		FY 07/08		FY 08/09		FY 09/10		FY 10/11		FY 11/12		FY 12/13		FY 13/14		FY 14/15		FY 15/16		Total Program		Cumulative Water Savings across all Fiscal Years
Agency	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm	Res	Comm	Res	Comm	Res	Comm	Res	Comm	Res	Comm	Res	Comm	Res	Comm	Res	Comm.	
Brea	2	0	1	3	8	6	0	40	3	9	0	0	2	0	8	0	9	8	4	0	43	6	5	0	85	72	398.22
Buena Park	0	0	0	0	0	0	0	0	3	1	0	0	0	0	4	19	3	0	0	0	4	10	0	0	14	30	85.75
East Orange CWD RZ	1	0	2	0	0	0	0	0	0	0	0	0	1	0	5	0	2	0	0	0	2	0	0	0	13	0	3.55
El Toro WD	1	0	8	0	4	95	1	174	0	25	2	18	5	5	26	2	7	2	11	0	8	9	4	0	77	330	1,976.03
Fountain Valley	3	3	2	2	11	0	4	0	1	0	0	6	2	2	8	2	3	2	4	0	7	10	2	0	47	27	114.99
Garden Grove	2	2	11	1	2	0	1	3	2	1	6	0	5	4	7	0	5	2	9	0	10	14	3	3	63	30	106.46
Golden State WC	0	0	15	2	24	12	8	8	1	2	9	22	7	4	13	3	9	49	9	25	39	12	1	0	135	139	520.07
Huntington Beach	5	2	21	9	12	12	7	1	13	1	6	27	6	36	15	4	18	33	20	35	19	2	11	0	153	162	665.38
Irvine Ranch WD	2	2	68	111	160	434	66	183	29	56	14	145	28	153	267	71	414	135	71	59	67	310	9	0	1,195	1,659	7,923.73
La Habra	0	0	0	0	7	1	1	0	0	0	0	21	0	0	3	0	4	7	2	0	4	7	57	43	78	79	171.24
La Palma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	0	1	1	7	1	1.60
Laguna Beach CWD	3	0	5	0	21	0	5	0	2	0	2	14	4	1	109	2	76	2	71	0	86	0	0	0	384	19	157.52
Mesa Water	5	0	13	27	14	6	12	0	6	7	13	7	7	22	21	0	10	2	15	2	17	28	5	0	138	101	486.67
Moulton Niguel WD	2	0	25	10	39	52	59	20	21	23	17	162	36	60	179	31	51	74	40	45	46	95	2	0	517	572	2,337.11
Newport Beach	3	17	35	4	125	86	98	40	10	27	7	58	6	0	275	12	242	26	168	75	11	9	53	25	1,033	379	1,957.82
Orange	8	4	37	13	28	38	4	0	5	2	2	13	5	8	25	0	20	24	13	9	18	31	4	0	169	142	667.97
San Juan Capistrano	0	0	5	4	5	4	11	1	10	0	7	49	13	1	103	2	14	18	6	11	6	19	4	2	184	111	448.73
San Clemente	4	0	483	1	46	7	21	60	81	20	13	209	46	11	212	17	26	7	28	2	28	24	16	6	1,004	364	2,056.38
Santa Margarita WD	3	0	15	8	40	96	53	70	25	44	10	152	61	53	262	7	53	171	64	93	53	321	8	0	647	1,015	3,563.97
Santiago CWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	1	31	1	2.10
Seal Beach	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	1	0	1	36	1	12	0	0	3	52	104.07
Serrano WD	0	0	0	0	0	0	0	0	0	0	11	0	4	0	3	0	1	0	0	0	4	0	1	0	24	0	5.95
South Coast WD	2	0	6	1	17	29	7	49	11	6	3	10	13	3	78	10	13	16	8	4	104	73	4	0	266	201	828.89
Trabuco Canyon WD	0	0	29	0	10	93	4	0	1	0	2	0	2	10	12	0	6	0	2	0	6	1	6	0	80	104	695.27
Tustin	1	0	1	4	0	0	2	3	7	9	10	14	10	0	11	0	8	4	9	1	18	14	8	0	85	49	211.62
Westminster	1	0	8	12	6	0	1	0	3	0	3	0	1	1	2	0	1	1	2	0	13	17	4	0	45	31	130.93
Yorba Linda	0	0	30	6	31	5	20	41	8	5	5	21	25	0	22	0	20	0	12	5	32	2	15	1	220	86	529.19
MWDOC Totals	48	30	820	218	610	976	385	693	242	238	142	949	289	374	1,671	185	1,017	583	571	402	648	1,026	254	82	6,697	5,756	26,151.20
Anaheim	6	1	8	13	17	78	12	57	9	59	5	46	12	11	23	60	19	10	9	26	7	52	6	7	133	420	1,949.05
Fullerton	0	0	2	0	10	0	10	0	2	2	2	39	9	33	22	51	9	29	8	0	40	26	5	6	119	186	641.99
Santa Ana	0	0	0	0	1	0	3	0	2	4	1	8	8	0	6	5	8	19	7	8	9	27	10	1	55	72	190.50
Non-MWDOC Totals	6	1	10	13	28	78	25	57	13	65	8	93	29	44	51	116	36	58	24	34	56	105	21	14	307	678	2,781.54
Orange County Totals	54	31	830	231	638	1,054	410	750	255	303	150	1,042	318	418	1,722	301	1,053	641	595	436	704	1,131	275	96	7,004	6,434	28,933

ROTATING NOZZLES INSTALLED BY AGENCY
through MWDOC and Local Agency Conservation Programs

	FY 06/07			FY 07/08			FY 08/09			FY 10/11			FY 11/12			FY 12/13			FY 13/14			FY 14/15			FY 15/16			Total Program			Cumulative Water Savings across all Fiscal Years
	Small		Large	Small		Large	Small		Large	Small		Large	Small		Large	Small		Large	Small		Large	Small		Large	Small		Large	Small		Large	
Agency	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	
Brea	0	0	0	0	0	0	22	0	0	32	0	0	130	0	0	65	120	0	84	0	0	157	45	0	0	842	0	498	1,107	0	13.71
Buena Park	0	0	0	0	0	0	37	75	0	29	0	0	32	0	0	65	0	0	53	0	0	248	0	0	0	0	0	464	75	2,535	450.81
East Orange	0	0	0	0	0	0	105	0	0	0	0	0	340	0	0	55	0	0	30	0	0	221	0	0	0	0	0	751	0	0	9.60
El Toro	0	0	0	0	0	0	88	290	0	174	0	0	357	76	0	23	6,281	0	56	3,288	0	1,741	28,714	0	90	4,457	0	2,674	45,980	890	635.80
Fountain Valley	0	0	0	51	0	0	83	0	0	83	0	0	108	0	0	35	0	0	0	0	0	107	0	0	18	0	0	506	0	0	7.95
Garden Grove	0	0	0	44	0	0	153	106	0	38	0	0	119	0	0	95	0	0	80	0	0	88	50	0	44	0	0	812	201	0	17.16
Golden State	0	0	0	161	0	0	83	0	0	303	943	0	294	0	0	257	2,595	0	192	0	0	583	1,741	0	65	0	0	2,218	5,308	0	102.89
Huntington Beach	0	0	0	93	845	1,202	322	19	1,174	203	625	0	458	0	0	270	0	0	120	0	0	798	1,419	0	198	1,432	0	2,501	7,760	2,681	746.72
Irvine Ranch	0	0	0	610	7,435	440	1,594	5,108	85	2,411	2,861	0	1,715	4,255	0	25,018	1,014	0	11,010	4,257	0	1,421	632	0	171	1,110	0	44,984	81,113	2,004	2,656.37
La Habra	0	535	0	9	0	0	15	0	900	0	0	0	33	90	0	0	0	0	15	0	0	109	338	0	21	0	0	202	1,236	900	217.49
La Palma	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0.24
Laguna Beach	0	0	0	115	0	0	101	47	0	156	0	0	763	0	0	3,596	0	0	2,948	878	0	2,879	1,971	0	46	0	0	10,795	2,896	0	164.61
Mesa Water	83	0	0	0	25	343	198	0	0	118	0	0	297	277	0	270	0	0	361	0	0	229	0	0	77	0	0	1,828	385	343	117.26
Moulton Niguel	0	0	0	297	120	0	426	6,883	1,986	1,578	0	0	1,225	0	0	512	1,385	0	361	227	0	1,596	4,587	0	473	233	0	6,702	13,435	2,945	906.15
Newport Beach	0	0	0	22	569	0	65	170	0	337	1,208	0	640	3,273	0	25,365	50	0	19,349	6,835	0	460	3,857	0	250	0	0	46,580	20,743	0	947.31
Orange	0	0	0	158	0	0	961	163	0	135	30	0	343	0	0	264	0	0	245	120	0	304	668	0	271	0	0	2,810	981	0	58.18
San Clemente	0	0	0	118	0	0	466	25	0	2,612	851	0	4,266	117	1,343	631	172	0	415	5,074	0	326	0	0	279	0	0	9,842	7,538	1,343	387.00
San Juan Capistrano	0	0	0	70	0	0	434	1,660	0	1,452	0	0	949	0	0	684	30	0	370	0	0	495	737	0	15	0	0	5,125	8,136	0	239.81
Santa Margarita	0	0	0	165	0	0	1,079	68	0	3,959	3,566	0	4,817	0	0	983	0	0	389	0	0	1,207	1,513	0	711	107	0	15,041	6,191	611	415.93
Seal Beach	0	0	0	0	0	0	115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	5,261	0	0	0	0	155	5,552	0	50.97
Serrano	0	0	0	94	0	0	24	0	0	364	0	0	58	0	0	190	0	0	105	0	0	377	0	0	291	0	0	3,001	0	0	48.15
South Coast	0	0	0	74	133	0	115	0	0	318	1,772	0	688	359	0	435	0	0	70	0	0	4,993	13,717	0	116	179	0	6,809	16,160	0	213.13
Trabuco Canyon	0	0	0	130	0	0	0	0	0	0	0	0	379	0	0	34	0	0	0	0	0	56	0	0	77	0	0	2,033	791	0	52.43
Tustin	0	0	0	23	0	0	549	0	0	512	0	0	476	1,013	0	378	0	0	329	0	0	408	0	0	120	45	0	3,109	1,058	0	60.05
Westminster	0	0	0	0	0	0	111	0	0	0	0	0	26	0	0	15	0	0	0	0	0	54	0	0	57	0	0	343	0	0	5.47
Yorba Linda	0	0	0	563	0	0	440	113	500	529	0	0	559	0	0	730	0	0	40	990	0	921	0	0	636	0	0	4,789	4,359	500	255.63
MWDOC Totals	83	535	0	2,797	9,127	1,985	7,596	14,727	4,645	15,343	11,856	0	19,072	9,460	1,343	59,970	11,647	0	36,622	21,669	0	19,818	65,250	0	4,026	8,405	0	174,582	231,005	14,752	8,780.80
Anaheim	0	0	0	68	0	0	329	0	0	372	382	0	742	38,554	0	459	813	0	338	0	0	498	712	0	152	5,221	0	3,231	45,846	105	575.88
Fullerton	0	0	0	95	0	0	446	64	0	416	0	0	409	0	0	119	0	0	107	0	0	684	1,196	0	260	0	0	2,584	1,260	1,484	306.37
Santa Ana	0	0	0	145	0	0	96	56	0	53	0	0	22	65	0	99	0	0	86	2,533	0	310	0	0	0	0	0	859	3,226	0	57.47
Non-MWDOC Totals	0	0	0	308	0	0	871	120	0	841	382	0	1,173	38,619	0	677	813	0	531	2,533	0	1,492	1,908	0	412	5,221	0	6,674	50,332	1,589	939.71
Orange County Totals	83	535	0	3,105	9,127	1,985	8,467	14,847	4,645	16,184	12,238	0	20,245	48,079	1,343	60,647	12,460	0	37,153	24,202	0	21,310	67,158	0	4,438	13,626	0	181,256	281,337	16,341	9,720.51

SOCAL WATER$MART COMMERCIAL PLUMBING FIXTURES REBATE PROGRAM[1]
INSTALLED BY AGENCY
through MWDOC and Local Agency Conservation Programs

Agency	FY 07/08	FY 08/09	FY 09/10	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	Totals	Cumulative Water Savings across all Fiscal Years
Brea	27	113	24	4	1	234	0	10	53	**593**	**346**
Buena Park	153	432	122	379	290	5	23	56	94	**1,859**	**908**
East Orange CWD RZ	0	0	0	0	0	0	0	0	0	**0**	**0**
El Toro WD	0	92	143	1	137	0	212	6	1	**760**	**512**
Fountain Valley	17	35	0	2	314	0	0	1	0	**623**	**517**
Garden Grove	5	298	130	22	0	4	1	167	160	**1,525**	**1,304**
Golden State WC	46	414	55	68	135	0	1	0	182	**1,986**	**1,685**
Huntington Beach	48	104	126	96	156	104	144	7	451	**1,981**	**1,368**
Irvine Ranch WD	121	789	2,708	1,002	646	1,090	451	725	894	**11,702**	**5,898**
La Habra	191	75	53	4	0	0	0	0	109	**652**	**478**
La Palma	0	140	21	0	0	0	0	0	0	**166**	**74**
Laguna Beach CWD	20	137	189	0	0	0	27	0	0	**446**	**281**
Mesa Water	141	543	219	669	41	6	0	79	269	**3,080**	**1,817**
Moulton Niguel WD	9	69	151	6	0	0	0	3	0	**583**	**722**
Newport Beach	98	27	245	425	35	0	0	566	0	**1,834**	**1,144**
Orange	18	374	67	1	73	1	271	81	62	**1,966**	**1,560**
San Juan Capistrano	2	1	1	0	0	0	14	0	0	**260**	**367**
San Clemente	2	18	43	0	19	0	0	1	0	**432**	**350**
Santa Margarita WD	6	23	11	0	0	0	0	2	0	**117**	**182**
Santiago CWD	0	0	0	0	0	0	0	0	0	**0**	**0**
Seal Beach	1	2	124	0	0	0	0	0	0	**354**	**383**
Serrano WD	0	0	0	0	0	0	0	0	0	**0**	**0**
South Coast WD	9	114	56	422	84	148	0	382	0	**1,320**	**441**
Trabuco Canyon WD	0	4	0	0	0	0	0	0	0	**11**	**14**
Tustin	115	145	25	230	0	0	0	75	0	**832**	**720**
Westminster	40	161	16	63	35	1	28	0	20	**835**	**899**
Yorba Linda	10	24	8	30	0	1	0	0	135	**420**	**498**
MWDOC Totals	**1,079**	**4,134**	**4,537**	**3,424**	**1,966**	**1,594**	**1,172**	**2,161**	**2,430**	**34,337**	**22,466**
Anaheim	766	3,298	582	64	48	165	342	463	959	**11,331**	**6,099**
Fullerton	133	579	29	4	0	94	0	178	55	**1,736**	**1,427**
Santa Ana	493	815	728	39	12	16	17	5	178	**4,384**	**4,166**
Non-MWDOC Totals	**1,392**	**4,692**	**1,339**	**107**	**60**	**275**	**359**	**646**	**1,192**	**17,451**	**11,691**
Orange County Totals	**2,471**	**8,826**	**5,876**	**3,531**	**2,026**	**1,869**	**1,531**	**2,807**	**3,622**	**51,788**	**34,157**

[1] Retrofit devices include ULF Toilets and Urinals, High Efficiency Toilets and Urinals, Multi-Family and Multi-Family 4-Liter HETs, Zero Water Urinals, High Efficiency Clothes Washers, Cooling Tower Conductivity Controllers, Ph Cooling Tower Conductivity Controllers, Flush Valve Retrofit Kits, Pre-rinse Spray heads, Hospital X-Ray Processor Recirculating Systems, Steam Sterilizers, Food Steamers, Water Pressurized Brooms, Laminar Flow Restrictors, and Ice Making Machines.

Water Smart Landscape Program

Total Number of Meters in Program by Agency

Agency	FY 04-05	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	Overall Water Savings To Date (AF)
Brea	0	0	0	0	0	0	0	22	22	22	22	22	62.80
Buena Park	0	0	0	0	0	17	103	101	101	101	101	101	455.49
East Orange CWD RZ	0	0	0	0	0	0	0	0	0	0	0	0	0.00
El Toro WD	88	109	227	352	384	371	820	810	812	812	812	812	4,798.99
Fountain Valley	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Garden Grove	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Golden State WC	0	0	0	14	34	32	34	32	32	32	32	32	198.31
Huntington Beach	0	0	0	0	0	31	33	31	31	31	31	31	146.22
Irvine Ranch WD	277	638	646	708	1,008	6,297	6,347	6,368	6,795	6,797	6,769	6,780	37,821.08
Laguna Beach CWD	0	0	0	0	57	141	143	141	124	124	124	124	724.23
La Habra	0	0	0	0	23	22	24	22	22	22	22	22	135.15
La Palma	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Mesa Water	191	170	138	165	286	285	288	450	504	511	514	515	2,906.82
Moulton Niguel WD	80	57	113	180	473	571	595	643	640	675	673	695	4,073.55
Newport Beach	32	27	23	58	142	171	191	226	262	300	300	300	1,479.78
Orange	0	0	0	0	0	0	0	0	0	0	0	0	0.00
San Clemente	191	165	204	227	233	247	271	269	269	299	407	438	2,336.02
San Juan Capistrano	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Santa Margarita WD	547	619	618	945	1,571	1,666	1,746	1,962	1,956	2,274	2,386	2,386	14,007.83
Seal Beach	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Serrano WD	0	0	0	0	0	0	0	0	0	0	0	0	0.00
South Coast WD	0	0	0	62	117	108	110	118	118	118	164	164	818.21
Trabuco Canyon WD	0	0	0	12	49	48	62	60	60	60	60	60	346.24
Tustin	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Westminster	0	0	0	10	18	18	20	18	18	18	18	18	115.17
Yorba Linda WD	0	0	0	0	0	0	0	0	0	0	0	0	0.00
MWDOC Totals	**1,406**	**1,785**	**1,969**	**2,733**	**4,395**	**10,025**	**10,787**	**11,273**	**11,766**	**12,196**	**12,435**	**12,500**	**70,425.9**
Anaheim	0	0	0	0	0	142	146	144	190	190	190	190	1,147.97
Fullerton	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Santa Ana	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Non-MWDOC Totals	**0**	**0**	**0**	**0**	**0**	**142**	**146**	**144**	**190**	**190**	**190**	**190**	**1,147.97**
Orange Co. Totals	**1,406**	**1,785**	**1,969**	**2,733**	**4,395**	**10,167**	**10,933**	**11,417**	**11,956**	**12,386**	**12,625**	**12,690**	**71,573.83**

INDUSTRIAL PROCESS WATER USE REDUCTION PROGRAM

Number of Process Changes by Agency

Agency	FY 07/08	FY 08/09	FY 09/10	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	Overall Program Interventions	Annual Water Savings[1]	Cumulative Water Savings across all Fiscal Years[1]
Brea	0	0	0	0	0	0	0	0	0	0	0	0
Buena Park	0	1	0	0	0	0	0	0	0	1	54	365
East Orange	0	0	0	0	0	0	0	0	0	0	0	0
El Toro	0	0	0	0	0	0	0	0	0	0	0	0
Fountain Valley	0	0	0	0	0	0	0	0	0	0	0	0
Garden Grove	0	0	0	0	0	0	0	0	0	0	0	0
Golden State	1	0	0	0	0	0	0	0	0	1	3	22
Huntington Beach	0	0	0	0	0	2	0	1	0	3	127	234
Irvine Ranch	0	0	2	1	1	1	1	0	0	6	98	366
La Habra	0	0	0	0	0	0	0	0	0	0	0	0
La Palma	0	0	0	0	0	0	0	0	0	0	0	0
Laguna Beach	0	0	0	0	0	0	0	0	0	0	0	0
Mesa Water	0	0	0	0	0	0	0	0	0	0	0	0
Moulton Niguel	0	0	0	0	0	0	0	0	0	0	0	0
Newport Beach	0	0	0	0	0	0	0	1	0	1	21	18
Orange	1	0	0	0	0	0	0	0	0	1	43	330
San Juan Capistrano	0	0	0	0	0	0	0	0	0	0	0	0
San Clemente	0	0	0	0	0	0	0	0	0	0	0	0
Santa Margarita	0	0	0	0	0	0	0	0	0	0	0	0
Seal Beach	0	0	0	0	0	0	0	0	0	0	0	0
Serrano	0	0	0	0	0	0	0	0	0	0	0	0
South Coast	0	0	0	0	0	0	0	0	0	0	0	0
Trabuco Canyon	0	0	0	0	0	0	0	0	0	0	0	0
Tustin	0	0	0	0	0	0	0	0	0	0	0	0
Westminster	0	0	0	0	0	0	0	0	0	0	0	0
Yorba Linda	0	0	0	0	0	0	0	0	0	0	0	0
MWDOC Totals	2	1	2	1	1	3	1	2	0	13	346	1335
Anaheim	0	0	0	0	0	0	0	0	0	0	0	0
Fullerton	0	0	0	0	0	0	0	0	0	0	0	0
Santa Ana	0	0	0	0	0	0	0	0	1	1	11	23
OC Totals	2	1	2	1	1	3	1	2	1	14	357	1357

[1] Acre feet of savings determined during a one year monitoring period.

If monitoring data is not available, the savings estimated in agreement is used.

HIGH EFFICIENCY TOILETS (HETs) INSTALLED BY AGENCY

through MWDOC and Local Agency Conservation Programs

Agency	FY05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	Total	Cumulative Water Savings across all Fiscal Years
Brea	0	2	7	43	48	8	0	0	38	146	115	407	**56.69**
Buena Park	0	1	2	124	176	7	0	0	96	153	75	634	**126.10**
East Orange CWD RZ	0	0	10	12	1	0	0	0	13	26	16	78	**12.77**
El Toro WD	0	392	18	75	38	18	0	133	218	869	159	1,920	**346.39**
Fountain Valley	0	69	21	262	54	17	0	0	41	132	144	740	**169.64**
Garden Grove	0	14	39	443	181	24	0	0	63	350	276	1,390	**281.36**
Golden State WC	2	16	36	444	716	37	80	2	142	794	385	2,654	**514.92**
Huntington Beach	2	13	59	607	159	76	0	0	163	1,190	455	2,724	**443.98**
Irvine Ranch WD	29	1,055	826	5,088	2,114	325	0	1,449	810	1,777	1,398	14,871	**3,784.91**
Laguna Beach CWD	0	2	17	91	28	11	0	0	45	112	42	348	**66.56**
La Habra	0	3	18	296	34	20	0	0	37	94	52	554	**139.13**
La Palma	0	1	10	36	26	13	0	0	21	59	34	200	**36.73**
Mesa Water	0	247	19	736	131	7	0	0	147	162	116	1,565	**441.29**
Moulton Niguel WD	0	20	104	447	188	46	0	0	400	2,497	1,455	5,157	**593.83**
Newport Beach	0	5	19	163	54	13	0	0	49	168	141	612	**110.87**
Orange	1	20	62	423	79	40	0	1	142	978	329	2,075	**326.05**
San Juan Capistrano	0	10	7	76	39	11	0	0	35	140	143	461	**69.71**
San Clemente	0	7	22	202	66	21	0	0	72	225	178	793	**141.13**
Santa Margarita WD	0	5	14	304	151	44	0	0	528	997	721	2,764	**350.18**
Seal Beach	0	678	8	21	12	1	0	2	17	50	45	834	**311.28**
Serrano WD	2	0	1	13	5	0	0	0	2	40	37	100	**12.47**
South Coast WD	2	2	29	102	41	12	23	64	102	398	175	950	**133.04**
Trabuco Canyon WD	0	0	4	23	23	0	0	0	10	108	107	275	**31.24**
Tustin	0	186	28	387	479	17	0	0	64	132	137	1,430	**393.93**
Westminster	0	17	25	541	167	23	0	0	35	161	287	1,256	**287.02**
Yorba Linda WD	0	14	89	323	96	18	0	0	40	280	278	1,138	**223.99**
MWDOC Totals	38	2,779	1,494	11,282	5,106	809	103	1,651	3,330	12,038	7,300	45,930	**9,405.17**
Anaheim	0	255	78	2,771	619	114	0	0	156	1,188	400	5,581	**1,433.43**
Fullerton	0	4	28	286	60	23	0	0	61	293	193	948	**174.49**
Santa Ana	0	11	25	925	89	23	0	0	33	602	209	1,917	**425.93**
Non-MWDOC Totals	0	270	131	3,982	768	160	0	0	250	2,083	802	8,446	**2,033.86**
Orange County Totals	**38**	**3,049**	**1,625**	**15,264**	**5,874**	**969**	**103**	**1,651**	**3,580**	**14,121**	**8,102**	**54,376**	**11,439.03**

TURF REMOVAL BY AGENCY[1]

through MWDOC and Local Agency Conservation Programs

Agency	FY 10/11		FY 11/12		FY 12/13		FY 13/14		FY 14/15		FY 15/16		Total Program		Cumulative Water Savings across all Fiscal Years
	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	
Brea	**0**	**0**	3,397	9,466	7,605	0	5,697	0	71,981	30,617	12,421	0	101,101	40,083	**46.12**
Buena Park	**0**	**0**	0	0	0	0	0	0	11,670	1,626	5,827	0	17,497	1,626	**4.54**
East Orange	**0**	**0**	0	0	0	0	1,964	0	18,312	0	6,921	0	27,197	0	**6.92**
El Toro	**0**	**0**	4,723	0	4,680	72,718	4,582	0	27,046	221,612	15,277	86,846	56,308	381,176	**132.49**
Fountain Valley	**0**	**0**	1,300	0	682	7,524	4,252	0	45,583	5,279	5,869	0	57,686	12,803	**22.35**
Garden Grove	**0**	**46,177**	14,013	0	4,534	0	8,274	0	67,701	22,000	13,443	0	107,965	68,177	**81.61**
Golden State	**0**	**0**	42,593	30,973	31,813	3,200	32,725	8,424	164,507	190,738	29,919	0	301,557	233,335	**192.04**
Huntington Beach	**801**	**3,651**	27,630	48,838	9,219	12,437	20,642	0	165,600	58,942	54,016	7,426	277,908	131,294	**149.53**
Irvine Ranch	**5,423**	**12,794**	6,450	1,666	32,884	32,384	36,584	76,400	234,905	317,999	70,450	1,174,609	386,696	1,615,852	**434.10**
La Habra	**0**	**7,775**	0	8,262	0	0	0	0	14,014	1,818	6,127	2,936	20,141	20,791	**18.02**
La Palma	**0**	**0**	0	0	0	0	0	0	4,884	0	500	57,400	5,384	57,400	**9.47**
Laguna Beach	**978**	**0**	2,533	0	2,664	1,712	4,586	226	13,647	46,850	2,693	0	27,101	48,788	**24.38**
Mesa Water	**0**	**0**	6,777	0	10,667	0	22,246	0	131,675	33,620	18,947	0	190,312	33,620	**68.99**
Moulton Niguel	**956**	**16,139**	4,483	26,927	11,538	84,123	14,739	40,741	314,250	1,612,845	80,041	127,043	426,007	1,907,818	**681.78**
Newport Beach	**0**	**0**	3,454	0	3,548	2,346	894	0	33,995	65,277	1,064	55,287	42,955	122,910	**41.78**
Orange	**0**	**0**	12,971	0	15,951	8,723	11,244	0	120,093	281,402	19,781	0	180,040	290,125	**142.80**
San Clemente	**0**	**0**	21,502	0	16,062	13,165	18,471	13,908	90,349	1,137	18,718	392,742	165,102	420,952	**128.24**
San Juan Capistrano	**0**	**0**	22,656	103,692	29,544	27,156	12,106	0	101,195	32,366	13,778	19,598	179,279	182,812	**167.35**
Santa Margarita	**4,483**	**5,561**	1,964	11,400	10,151	11,600	17,778	48,180	211,198	514,198	104,454	178,666	350,028	769,605	**300.42**
Seal Beach	**0**	**0**	0	0	3,611	0	0	0	15,178	504	2,159	0	20,948	504	**6.72**
Serrano	**0**	**0**	0	0	0	0	2,971	0	41,247	0	32,545	0	76,763	0	**17.35**
South Coast	**0**	**16,324**	6,806	0	9,429	4,395	15,162	116,719	84,282	191,853	46,342	0	162,021	329,291	**165.41**
Trabuco Canyon	**0**	**0**	272	0	1,542	22,440	2,651	0	14,771	0	5,436	66,964	24,672	89,404	**29.00**
Tustin	**0**	**0**	0	0	9,980	0	1,410	0	71,285	14,137	13,567	1,700	96,242	15,837	**32.24**
Westminster	**0**	**0**	0	0	0	0	0	0	14,040	34,631	11,354	0	25,394	34,631	**15.22**
Yorba Linda	**11,349**	**0**	0	0	0	0	0	0	112,136	12,702	51,470	54,587	174,955	67,289	**59.33**
MWDOC Totals	**23,990**	**108,421**	**183,524**	**241,224**	**216,104**	**303,923**	**238,978**	**304,598**	**2,195,544**	**3,692,153**	**643,119**	**2,225,804**	**3,501,259**	**6,876,123**	**2,978.20**
Anaheim	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**-**
Fullerton	**0**	**0**	0	0	0	0	0	9,214	0	0	0	0	0	9,214	**3.87**
Santa Ana	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**-**
Non-MWDOC Totals	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9,214**	**0**	**0**	**0**	**0**	**0**	**9,214**	**3.87**
Orange County Totals	**23,990**	**108,421**	**183,524**	**241,224**	**216,104**	**303,923**	**238,978**	**313,812**	**2,195,544**	**3,692,153**	**643,119**	**2,225,804**	**3,501,259**	**6,885,337**	**2,982**

[1]Installed device numbers are listed as square feet

HOME WATER SURVEYS PERFORMED BY AGENCY

through MWDOC and Local Agency Conservation Programs

Agency	FY 13/14		FY 14/15		FY 15/16		Total		Cumulative
	Surveys	Cert Homes	Surveys	Cert Homes	Surveys	Cert Homes	Surveys	Cert Homes	Water Savings
Brea	1	0	2	0	0	0	3	0	0.16
Buena Park	0	0	1	0	0	0	1	0	0.05
East Orange	19	0	1	0	0	0	20	0	1.39
El Toro	0	0	3	0	0	0	3	0	0.14
Fountain Valley	3	0	4	0	0	0	7	0	0.40
Garden Grove	0	0	6	0	1	0	7	0	0.31
Golden State	0	0	0	0	0	0	0	0	0.00
Huntington Beach	2	0	5	0	2	0	9	0	0.42
Irvine Ranch	1	0	3	0	5	0	9	0	0.33
La Habra	0	0	1	0	0	0	1	0	0.05
La Palma	0	0	0	0	0	0	0	0	0.00
Laguna Beach	4	0	8	0	1	0	13	0	0.68
Mesa Water	0	0	0	0	0	0	0	0	0.00
Moulton Niguel	4	0	4	0	0	0	8	0	0.47
Newport Beach	2	0	8	0	3	0	13	0	0.59
Orange	2	0	18	0	1	0	21	0	1.01
San Clemente	15	0	13	0	0	0	28	0	1.67
San Juan Capistrano	4	0	13	0	2	0	19	0	0.94
Santa Margarita	15	0	40	1	12	0	67	1	3.22
Seal Beach	0	0	1	0	1	0	2	0	0.07
Serrano	0	0	2	0	0	0	2	0	0.09
South Coast	6	0	4	0	1	0	11	0	0.64
Trabuco Canyon	0	0	4	0	0	0	4	0	0.19
Tustin	0	0	10	0	4	0	14	0	0.56
Westminster	0	0	0	0	0	0	0	0	0.00
Yorba Linda	0	0	13	0	8	0	21	0	0.80
MWDOC Totals	**78**	**0**	**164**	**1**	**41**	**0**	**283**	**1**	**14.18**
Anaheim	0	0	0	0	0	0	0	0	0.00
Fullerton	0	0	17	0	1	0	18	0	0.82
Santa Ana	0	0	0	0	0	0	0	0	0.00
Non-MWDOC Totals	**0**	**0**	**17**	**0**	**1**	**0**	**18**	**0**	**0.82**
Orange County Totals	**78**	**0**	**181**	**1**	**42**	**0**	**301**	**1**	**15.007**

SYNTHETIC TURF INSTALLED BY AGENCY[1]

through MWDOC and Local Agency Conservation Programs

Agency	FY 07/08		FY 08/09		FY 09/10		FY 10/11		Total Program		Cumulative Water Savings across all Fiscal Years
	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	
Brea	0	0	2,153	2,160	500	0	0	0	2,653	2,160	3.30
Buena Park	0	0	1,566	5,850	0	0	0	0	1,566	5,850	5.19
East Orange	0	0	0	0	983	0	0	0	983	0	0.55
El Toro	3,183	0	2,974	0	3,308	0	895	0	10,360	0	6.98
Fountain Valley	11,674	0	1,163	0	2,767	0	684	0	16,288	0	12.46
Garden Grove	1,860	0	0	0	3,197	0	274	0	5,331	0	3.47
Golden State	6,786	0	13,990	0	15,215	0	2,056	0	38,047	0	24.88
Huntington Beach	15,192	591	12,512	0	4,343	1,504	0	0	32,047	2,095	25.29
Irvine Ranch	11,009	876	13,669	0	2,585	0	0	0	27,263	876	21.00
La Habra	0	0	0	0	0	0	0	0	0	0	-
La Palma	429	0	0	0	0	0	0	0	429	0	0.36
Laguna Beach	3,950	0	3,026	0	725	0	0	0	7,701	0	5.84
Mesa Water	4,114	0	3,005	78,118	4,106	0	2,198	0	13,423	78,118	63.46
Moulton Niguel	14,151	0	25,635	2,420	7,432	0	0	0	47,218	2,420	35.69
Newport Beach	2,530	0	6,628	0	270	0	0	0	9,428	0	6.92
Orange	4,169	0	7,191	0	635	0	0	0	11,995	0	8.89
San Clemente	9,328	0	11,250	455	2,514	1,285	500	0	23,592	1,740	18.37
San Juan Capistrano	0	0	7,297	639	2,730	0	4,607	0	14,634	639	9.02
Santa Margarita	12,922	0	26,069	0	21,875	0	7,926	0	68,792	0	44.68
Seal Beach	0	0	817	0	0	0	0	0	817	0	0.57
Serrano	7,347	0	1,145	0	0	0	0	0	8,492	0	6.97
South Coast	2,311	0	6,316	0	17,200	0	1,044	0	26,871	0	16.43
Trabuco Canyon	1,202	0	9,827	0	0	0	0	0	11,029	0	7.89
Tustin	6,123	0	4,717	0	2,190	0	0	0	13,030	0	9.67
Westminster	2,748	16,566	8,215	0	890	0	0	0	11,853	16,566	22.47
Yorba Linda	11,792	0	12,683	0	4,341	5,835	0	0	28,816	5,835	24.48
MWDOC Totals	132,820	18,033	181,848	89,642	97,806	8,624	20,184	0	432,658	116,299	384.83
Anaheim	4,535	0	7,735	20,093	13,555	65,300	4,122	0	29,947	85,393	69.18
Fullerton	4,865	876	5,727	0	6,223	0	105	0	16,920	876	12.36
Santa Ana	0	0	2,820	0	525	0	0	0	3,345	0	2.27
Non-MWDOC Totals	9,400	876	16,282	20,093	20,303	65,300	4,227	0	50,212	86,269	83.81
Orange County Totals	142,220	18,909	198,130	109,735	118,109	73,924	24,411	0	482,870	202,568	468.63

[1]Installed device numbers are calculated in square feet

ULF TOILETS INSTALLED BY AGENCY

through MWDOC and Local Agency Conservation Programs

Agency	Previous Years	FY 95-96	FY 96-97	FY 97-98	FY 98-99	FY 99-00	FY 00-01	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	FY 06-07	FY 07-08	FY 08-09	Total	Cumulative Water Savings across all Fiscal Years
Brea	378	189	299	299	122	144	867	585	341	401	26	48	17	4	0	**3,720**	**1,692.64**
Buena Park	361	147	331	802	520	469	524	1,229	2,325	1,522	50	40	18	9	0	**8,347**	**3,498.37**
East Orange CWD RZ	2	0	33	63	15	17	15	50	41	44	19	18	13	2	0	**332**	**138.23**
El Toro WD	1,169	511	678	889	711	171	310	564	472	324	176	205	61	40	0	**6,281**	**3,091.16**
Fountain Valley	638	454	635	858	1,289	2,355	1,697	1,406	1,400	802	176	111	58	32	0	**11,911**	**5,383.10**
Garden Grove	1,563	1,871	1,956	2,620	2,801	3,556	2,423	3,855	3,148	2,117	176	106	67	39	0	**26,298**	**12,155.41**
Golden State WC	3,535	1,396	3,141	1,113	3,024	2,957	1,379	2,143	3,222	1,870	167	116	501	43	0	**24,607**	**11,731.47**
Huntington Beach	3,963	1,779	2,600	2,522	2,319	3,492	3,281	2,698	3,752	1,901	367	308	143	121	0	**29,246**	**13,854.70**
Irvine Ranch WD	4,016	841	1,674	1,726	1,089	3,256	1,534	1,902	2,263	6,741	593	626	310	129	0	**26,700**	**11,849.23**
Laguna Beach CWD	283	93	118	74	149	306	220	85	271	118	32	26	29	6	0	**1,810**	**845.69**
La Habra	594	146	254	775	703	105	582	645	1,697	1,225	12	31	6	7	0	**6,782**	**2,957.73**
La Palma	65	180	222	125	44	132	518	173	343	193	31	27	20	17	0	**2,090**	**927.52**
Mesa Water	1,610	851	1,052	2,046	2,114	1,956	1,393	1,505	2,387	988	192	124	56	14	0	**16,288**	**7,654.27**
Moulton Niguel WD	744	309	761	698	523	475	716	891	728	684	410	381	187	100	0	**7,607**	**3,371.14**
Newport Beach	369	293	390	571	912	1,223	438	463	396	1,883	153	76	36	16	0	**7,219**	**3,166.77**
Orange	683	1,252	1,155	1,355	533	2,263	1,778	2,444	2,682	1,899	193	218	88	53	4	**16,600**	**7,347.93**
San Juan Capistrano	1,234	284	193	168	323	1,319	347	152	201	151	85	125	42	39	0	**4,663**	**2,324.42**
San Clemente	225	113	191	65	158	198	667	483	201	547	91	66	37	34	0	**3,076**	**1,314.64**
Santa Margarita WD	577	324	553	843	345	456	1,258	790	664	260	179	143	101	29	0	**6,522**	**3,001.01**
Seal Beach	74	66	312	609	47	155	132	81	134	729	29	10	6	12	0	**2,396**	**1,073.80**
Serrano WD	81	56	68	41	19	52	95	73	123	98	20	15	14	2	0	**757**	**338.66**
South Coast WD	110	176	177	114	182	181	133	358	191	469	88	72	32	22	0	**2,305**	**990.05**
Trabuco Canyon WD	10	78	42	42	25	21	40	181	102	30	17	20	12	14	0	**634**	**273.02**
Tustin	968	668	557	824	429	1,292	1,508	1,206	1,096	827	69	89	26	12	0	**9,571**	**4,423.88**
Westminster	747	493	969	1,066	2,336	2,291	2,304	1,523	2,492	1,118	145	105	70	24	0	**15,683**	**7,064.28**
Yorba Linda WD	257	309	417	457	404	1,400	759	1,690	1,155	627	158	136	81	41	0	**7,891**	**3,409.49**
MWDOC Totals	24,256	12,879	18,778	20,765	21,136	30,242	24,918	27,175	31,827	27,568	3,654	3,242	2,031	861	4	**249,336**	**113,878.61**
Anaheim	447	1,054	1,788	3,661	1,755	7,551	4,593	6,346	9,707	5,075	473	371	462	341	1	**43,625**	**18,359.52**
Fullerton	1,453	1,143	694	1,193	1,364	2,138	1,926	2,130	2,213	1,749	172	77	44	23	2	**16,321**	**7,435.23**
Santa Ana	1,111	1,964	1,205	2,729	2,088	8,788	5,614	10,822	10,716	9,164	279	134	25	5	0	**54,644**	**22,887.95**
Non-MWDOC Totals	3,011	4,161	3,687	7,583	5,207	18,477	12,133	19,298	22,636	15,988	924	582	531	369	3	**114,590**	**48,682.70**
Orange County Totals	27,267	17,040	22,465	28,348	26,343	48,719	37,051	46,473	54,463	43,556	4,578	3,824	2,562	1,230	7	**363,926**	**162,561.30**

APPENDIX I

SMWD Facilities List

Domestic		
Tanks	**Capacity (AF)**	**Capacity (Gallons)**
Alicia (A)	12	4,000,000
Alicia (B)	12	4,000,000
Casta (A)	6	2,000,000
Casta (B)	6	2,000,000
Covenant Hills	15	5,000,000
Estado (A)	4	1,300,000
Estado (B)*	1	300,000
Foothill	17	5,500,000
Island Pasture	12	4,000,000
O'Neill	18	6,000,000
Plano (A)	20	6,670,000
Plano (B)	17	5,500,000
Rancho Trabuco	6	2,000,000
Regulating Reservoir	9	3,000,000
Star	12	4,000,000
Trabuco Ridge (A)	12	4,000,000
Trabuco Ridge (B)	12	4,000,000
Villa	2	600,000
Vista	2	600,000
Woods (A)	8	2,500,000
Woods (B)	8	2,500,000
Lakeside Forebay	1	330,000
Plaza Forebay	2	770,000
Las Flores (A)	31	10,000,000
Las Flores (B)	31	10,000,000
Talega Z1	18	6,000,000
Talega Z2 (A)	4	1,400,000
Talega Z2 (B)	4	1,400,000
Ladera	12	4,000,000
Middle Chiq (A)	6	2,000,000
Middle Chiq (B)	6	2,000,000
Total Capacity	330	107,370,000
Total # of Tanks	**31**	
NOTES: *Inactive Tank		

Domestic	
No.	**Pump Stations**
1	Altisima
2	Altura
3	AMP
4	Antonio
5	Casta
6	Coto de Caza
7	Covenant Hills
8	El Toro
9	Foothill
10	OC88
11	Island
12	Lakeside
13	Melinda
14	Mesa
15	Plaza
16	Talega
17	Tesoro
18	Trabuco
19	Zone 4 Fire
20	Zone 5 Fire
21	UCR
Qty	**21**
NOTES:	

Domestic		
Emergency Storage	**Capacity (AF)**	**Capacity (MG)**
UCR (38.48% capacity)	289	94,040,599
R-6 (51% capacity)	430	140,250,000
Total Capacity	719	234,290,599
Total # of Emergency Storage Tanks	**2**	
NOTES:		

Non-Potable		
Storage Tanks	**Capacity (AF)**	**Capacity (Gallons)**
Covenant Hills ZA	3	900,000
Zone B	2	520,000
Zone D	3	1,000,000
Talega ZA	12	4,000,000
Talega ZB	3	1,000,000
Ladera ZB	12	4,000,000
Middle Chiquita	12	4,000,000
Total Capacity	47	15,420,000
Total # of Storage Tanks	**7**	
NOTES:		

Non-Potable		
Open Reservoirs	**Capacity (AF)**	**Capacity (Gallons)**
Portola	500	162,925,500
Upper Oso	4,000	1,303,404,000
Total Capacity	4,500	1,466,329,500
Total # of Open Reservoirs	**2**	
NOTES:		

Non-Potable	
No.	**Pump Stations**
1	Talega ND
2	Barrier
3	Canyon Crest
4	Covenant Hills
5	Eastbrook
6	Finisterra
7	La Paz
8	Monterey Villa
9	Arroyo Trabuco Sump
10	Ladera ZC
11	Sendero
12	Horno
13	Prima Deschecha
Qty	**13**
NOTES:	

Wastewater	
No.	**Lift Stations**
1	Sendero
2	Coral Gardens
3	Cordova
4	Coto
5	Felipe
6	Golf
7	Horno
8	Las Flores*
9	Ladera
10	Meadow Ridge
11	North Beach
12	Ortega
13	Plano
14	South Ranch
15	Talega
16	Trabuco
17	Tres Vistas
18	Pico
19	San Juan
20	Esencia
Qty	**20**
NOTES: *Not Operational	

Wastewater	
No.	**Treatment Plants**
1	CWRP
2	Oso WRP
3	3a WRP
Qty	**3**
NOTES:	

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EXHIBIT 5

Santa Margarita Water District - Current Web Information on Urban Runoff, Recycled Water, and Pesticide Testing

Purpose of this compilation

This exhibit compiles two current Santa Margarita Water District (SMWD) webpages that document: (1) SMWD's use of urban return (runoff) water from Oso Creek, Dove Creek, and Horno Creek as an additional source blended with recycled water for irrigation; and (2) SMWD's statement that it does not routinely test recycled water for pesticides and herbicides because such testing is not required by Order No. 97-52.

Accessed: September 4, 2026

A. SMWD FAQ - Urban Return Water Blended With Recycled Water

Source: Santa Margarita Water District, Frequently Asked Questions, Your Water

URL: https://www.smwd.com/m/faq?cat=21

> SMWD is also a leader in using recycled water for landscape irrigation and has been successful in obtaining water from additional sources in the local area to supplement supply. The District uses recycled water for irrigation of slopes, parks, golf courses, schools and medians within its service area. Water is recycled at SMWD's three treatment plants, producing over 2 billion gallons of recycled water each year for landscape irrigation to homeowner associations and other municipalities within the District. **In addition, SMWD collects urban return (runoff) water from Oso Creek, Dove Creek, and Horno Creek to blend with the recycled water as an additional source for irrigation.** The use of recycled water and urban return flows from the creeks offset the need to import drinking water from MWD for irrigation.

Relevance

This SMWD statement directly documents the runoff-to-recycled-water pathway described in the SPARC submission and identifies Horno Creek, Oso Creek, and Dove Creek as sources of urban return water blended with recycled water for irrigation.

B. SMWD Water Quality: Ladera Ranch - Recycled Water Monitoring

Source: Santa Margarita Water District, Water Quality: Ladera Ranch

URL: https://smwd.com/627/Water-Quality-Ladera-Ranch

SMWD describes recycled water use in its service area as follows:

> Recycled water is water supplied for approved uses other than drinking and typical household uses. It is not intended for human consumption. Within the District's service area, this includes recycled water used for landscape irrigation, construction (dust-control), and other approved uses. Recycled water is kept physically separate from the drinking water system.
>
> The District's recycled water is highly treated wastewater that undergoes tertiary treatment, including filtration and disinfection, and meets California's requirements for disinfected tertiary recycled water under Title 22 of the California Code of Regulations. ... This high level of treatment allows recycled water to be safely used for a wide range of approved non-potable purposes, including irrigation of parks, schools, golf courses, residential common areas, medians and other publicly accessible landscapes.

SMWD specifically addresses pesticide and herbicide testing:

> **Does SMWD routinely test for pesticides and herbicides in recycled water?**
>
> **No.** This is not required by Order No. 97-52 recycled water permit issued by the California Regional Water Quality Control Board, San Diego. However, the District has done supplemental testing based on project and operational needs.

Relevance

This current Ladera-specific SMWD webpage confirms that recycled water is used in publicly accessible landscapes, including parks and schools, and states that SMWD does not routinely test recycled water for pesticides and herbicides under the existing permit requirements.

Compilation note: This document was prepared as an evidentiary exhibit from text appearing on the official SMWD website as accessed on September 4, 2026. It is not an SMWD-issued PDF. The source URLs are provided above so DPR can verify the current webpages directly.